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THE ECONOMIC RECORD

NOVEMBER, 1955

ECONOMIC DEVELOPMENT AND FINANCIAL STABILITY*

1. *Introduction*

A glance over the topics to be dealt with in this section during the coming week reveals a concentration on the economic processes associated with growth and development and on the problems connected with them. As I see the function of this address, therefore, it is to survey in broad outline the relationships between economic development and financial stability as they appear to the general practitioner in the economic field. By so doing I hope to provide a general background which will throw into bolder relief the more immediate problems of our economy.

Definitions

Let me first make clear the sense in which I propose to use the terms. By economic development I mean the use of resources both human and material to increase our capacity to produce goods and services—in other words, action by which we can increase and improve our equipment, technique and skills. Economic development is one way of using our resources and to use them for this purpose means, of course, that they cannot be used for others. Thus resources can be used to produce—

- (a) goods and services for current consumption, e.g. food, clothing, medical attention, maintenance of law and order, etc.;
- (b) consumers' equipment such as refrigerators, motor cars, radios, houses;
- (c) social equipment such as schools, hospitals, administrative buildings;
- (d) producers' equipment which includes collective property such as railways, roads and power plants and corporate property such as factories, shops and offices as well as individually owned equipment such as farm improvements, tools of trade and the like.

Narrowly defined, economic development should perhaps mean the use of resources to produce goods in the last category but, in Australia, economic development is associated with and to some extent

* Presidential address to Section G of A.N.Z.A.A.S., Melbourne, August 1955.

identified with increasing population. It is therefore appropriate to include those forms of equipment, particularly social equipment and houses, which are necessary to equip an increasing population.

Financial stability must be looked at in two ways. Internally I take it to mean the absence of substantial change in the value of money. If the Australian pound continues over the years to buy approximately the same quantities of goods and services of the kind people normally spend their money on, it can be regarded as stable. Absolute stability in this sense is impossible if only because the complex of goods in which people are interested changes, but the concept is clear enough for practical purposes.

From the external point of view the concept of financial stability is different. In a world of freely moving exchange rates it could perhaps be identified with reasonable stability in such rates, but in a world where variation in exchange rates occurs rarely and then only in response to a fundamental change in international economic relations, another criterion must be sought. When a country is facing difficulty in its international payments, it is now almost normal practice for its government to take action through exchange control and import restrictions to limit the effects of these difficulties and in a practical sense the existence, the severity and persistence of such controls can be regarded as evidence of some departure from external stability. In extreme cases of instability these measures may prove inadequate and a variation of exchange rates themselves occur. This concept is even less precise than that of internal financial stability and is different in kind since it is affected directly by what is happening in other countries.

It should be noted that the two types of stability need not run together. A country could be experiencing internal financial stability at the same time as it experienced instability in its external financial relations, and vice versa.

Briefly, a country can be regarded as enjoying financial stability if, over the period concerned, its domestic currency purchases an approximately uniform quantity of goods and services of the kind desired and if its nationals can spend or make payments abroad without significant restraint.

Presumptions

It is clear that most people would regard economic development and financial stability in the senses we have used the terms as desirable and certainly they are nowadays very much in the minds of most Australians. It is the purpose of this paper to explore the broad relationships between them—to see, for instance, how the pursuit of economic development may influence financial stability and to draw such con-

clusions as may be practicable about how we can best achieve them both.

It is important in an examination of this kind to be clear about the presumptions which underlie our approach. For instance, the issues would appear differently to a person who thought economic development a waste of effort or one who enjoyed fishing in the troubled waters of financial instability. For the purpose of this paper I have, therefore, accepted the following broad presumptions believing them to express a kind of common denominator of Australian contemporary attitudes:

- (1) that economic development is desirable both as a means to full employment and higher standards of living and as an end in itself;
- (2) that it is desirable that the value of money within the economy should be stable through time although minor variations are not of great significance;
- (3) that it is desirable that Australians should be free to buy, to travel, and to make payments abroad within the limits of their own resources, but that this end should not be pursued to the extent that it seriously endangers reasonable economic development, full employment or reasonable internal stability in the value of money;
- (4) that, within some limits, it is legitimate for governments to take action designed to increase the proportion of the economy's resources devoted to economic development beyond what it would be if left to individual decisions;
- (5) that if financial stability is endangered, it is legitimate for a government to take action directly or indirectly to preserve it;
- (6) that action by government necessary for these purposes should operate as far as possible on the factors determining the general economic and financial climate so that the decisions of individuals and enterprises are freely made in the light of apparently objective considerations.

It should, of course, be observed that these desiderata may be partially in conflict and that practical decisions will require a balancing of one against the other.

2. *Resources for Development*

Since economic development is a form of production, it follows that the resources available for it are the resources available for production of all kinds—the labour, natural resources, equipment and skills of the country and its people. These resources can be used either to produce the goods and services finally required by the community or to produce exports which are exchanged abroad for imports of

goods and services finally needed. The possible total volume of goods and services available within the economy depends partly on our own productive capacity, but partly also on the terms of trade. This is a very important factor to Australia. Since the war wool has exchanged on the average for one and a half times as many imports as it did in the five years before the war. This has added substantially both to our standards of consumption and to our rate of development.

First claim on these resources is made by expenditure on goods and services for immediate consumption purchased individually and those provided and paid for by public authorities. To these must be added expenditure on consumers' equipment which in the contemporary scene is making increasing claims on the resources of the economy. It is only to the extent that resources are freed for other purposes by saving—by abstaining from making claims on resources for consumption, that expenditure on development is possible without excessive pressure on available resources. What is the position in Australia?

We used to think that if there was one thing we really knew about the working of the economy it was the stability of the relation between consumption and income. The events of the last ten years, both in Australia and in other countries, have rather shaken our confidence.

The percentage of income spent on consumer goods and services has fallen as incomes have increased, although there appears to have been a reversal of this tendency in the last few years. During the 1930's personal consumption absorbed about 75 per cent of the supplies available after deducting movements in stocks; in the last five years the percentage has been between 60 and 65. This fall has been partly attributable to an increase in the proportion of income absorbed by taxation and has been accompanied by an increase in government expenditure of a current nature, particularly on defence. Current government expenditure now absorbs about 10 per cent of available supplies compared with less than 6 per cent pre-war. However, even allowing for this increase in government expenditure, the proportion of resources available for development has increased significantly, from about 20 per cent in the late 1930's to over 26 per cent in the last five years.

What is the likely trend of consumption expenditure in the near future? Consumption standards will presumably continue to rise with incomes, but it is not clear how the proportion of consumption to income will change. Although there might be some reason to expect that the proportion of income saved will increase as incomes rise, new products and new tastes, the wider use of hire purchase credit and continued economic security might well encourage consumers to spend a constant or even increasing proportion of their incomes.

The resources left for development in the Australian economy, after consumption needs have been met, have been maintained within recent years at relatively high levels. Indeed, Australia ranks among the group of countries with the highest rates of development.

Estimates of Supplies and Their Use

| | Averages for Four Years Ending | | | | Year |
|----------------------------|--------------------------------|--------------|--------------|--------------|------------------------|
| | June 1935 | June 1939 | June 1950 | June 1954 | Ending June 1955 |
| | £m. | £m. | £m. | £m. | £m. |
| Gross National Product .. | 692 | 904 | 2,149 | 4,053 | 4,832 |
| Exports, etc | 118 | 164 | 507 | 906 | 862 |
| "Retained" G.N.P. | 574 | 740 | 1,642 | 3,147 | 3,970 |
| Imports, etc. | 81 | 136 | 466 | 921 | 1,035 |
| Available Supplies | 655 | 876 | 2,108 | 4,068 | 5,005 |
| Less Increase in Stocks .. | — | 6 | 138 | 135 | 125 |
| Available for Final Use .. | 655 | 870 | 1,970 | 3,933 | 4,880 |

Percentages of Supplies Used

| <i>Consumption.</i> | % | % | % | % | % |
|---------------------------|------|------|------|------|------|
| Personal* | 80.2 | 73.7 | 70.3 | 63.3 | 64.7 |
| Government† | 5.8 | 5.7 | 9.1 | 10.6 | 9.8 |
| | 86.0 | 79.4 | 79.4 | 73.9 | 74.5 |
| <i>Investment (Gross)</i> | | | | | |
| Private‡ | 8.8 | 14.3 | 1.40 | 16.8 | 17.1 |
| Government | 5.2 | 6.3 | 6.6 | 9.3 | 8.4 |
| | 14.0 | 20.6 | 20.6 | 26.1 | 25.5 |

* Including financial enterprises.

† All expenditure on goods and services other than public works.

‡ Including all motor vehicles.

From what has been said it can be seen—

- (a) that development is a form of production and is an alternative to production for other purposes;
- (b) that the various forms of production are initiated by expenditure and that the allocation of resources between them is determined by the allocation of expenditure by individuals, by business, by public authorities and by governments.

The significance of expenditure in this process suggests a nexus between economic development and financial stability at least in its internal aspect. Let us follow it through step by step.

3. Relationship between Expenditure, Production, Employment and Prices

1. The resources available from the total for development are limited to those not used to produce consumption goods and services,

and this quantity is determined (unless there are labour and other resources being left idle) by what people, firms, and governments save from their incomes.

2. Decisions to spend on development are generally made independently of decisions to save; consequently, there is no reason why the resources required to give effect to the decisions to spend on development should prove to be equal to those which are made available by decisions to save.

3. It can happen, therefore, that the decisions to spend on consumption on the one hand and on development on the other can in the aggregate be more than or less than the amount which could be satisfied from current production at current prices.

4. If there is a tendency for spending to run beyond the value of current production, the effect is felt first on the stocks of goods held which are reduced by the extra spending. This in itself encourages attempts to increase production, and firms seek to increase the labour and other resources they employ. If the economy is already fully employed, their attempts to do so bid up the prices of labour and materials with consequent rises in the costs of production. These rises in costs can generally be passed on readily in increased prices when demand is at a high level. Furthermore, shortages tend to appear because demand exceeds supplies and competition tends to force up prices generally. Thus in a situation where decisions to spend on consumption and on development would involve the use of more labour and materials than are available at current prices, there appear shortages, rising costs and rising prices.

5. On the other hand, if there is a tendency for spending to be less than the value of potential current production at current prices, the impact is felt first by stocks of goods which accumulate unsold in the hands of merchants and producers. This in itself leads to decisions to reduce production, leading to unemployment and waste of resources. Surplus stocks lead to cutting of prices, and unemployment to wage cutting and reductions in incomes, which lead in turn to lower costs and prices.

6. These two processes tend to be cumulative so that both overspending and underspending are intensified by the results they produce. Thus overspending produces rising costs and prices, with resultant increases in profits and other incomes which make expansion appear attractive and so intensify the tendency for spending to be increased. On the other hand, underspending produces unemployment, with loss of income, which means that spending will be cut further and the incentive to spend on development correspondingly reduced.

7. In the depression period of 1930-5 we had a classic illustration of a period of underspending. The drive for development had apparently spent itself during the 1920's and there seemed a dearth of opportunities. Unemployment on a widespread and intensive scale was normal and there was downward pressure on wages and other incomes.

The period from 1945-51 presents the opposite picture. The war-time accumulation of arrears of capital replacement, stimulated by increasing population and the emergence of new opportunities for industrial growth, produced a flood of plans for expenditure on development—by governments, firms and individuals. This expenditure quickly outran possible production and we experienced the familiar cycle of shortages, rising costs, rising prices, following one another in increasing tempo. During this period the internal value of the Australian pound was seriously unstable—so much so that in the later stages confidence in its future was gravely impaired, to the extent that many people were unwilling to hold assets in fixed money form, e.g. government securities, and sought forms of assets such as land and equity shares whose prices might be expected to move with changing money values. This unwillingness to hold wealth in the form of money, by increasing the demand for property and shares, intensified the rise in prices and the urge to expansion. Furthermore, in this period we had a taste of the social inequities caused by a rapid deterioration in the value of money which created hardship for pensioners and others on fixed incomes and wiped out much of the value of past savings.

This period of inflation was ended in 1951-2 by a sharp fall in our export income and a flood of imported goods. These produced an acute financial stringency and a buyers' market for goods as a result of which there was a widespread revision of developmental plans, public and private, to a scale more nearly within our physical capacity.

8. Thus it can be seen that expenditure on development as a major and variable component of total expenditure can affect profoundly internal financial stability. Unless this expenditure is sufficient, together with expenditure on consumption, to employ fully our labour and resources, we are likely to experience falling prices and incomes with a cumulative tendency to unemployment and depression in the economy. On the other hand, once expenditure on development passes the point at which, together with expenditure on consumption, it is adequate to employ our resources fully, we are likely to experience rising prices, shortages and waste characteristic of periods of inflation.

4. Relationship between Development and External Stability

The relationship between spending on development and external financial stability is less immediately apparent but is just as important.

It is easy to see that in any significant amount of expenditure in Australia there will be involved some expenditure overseas—if not on the goods or services themselves, then on raw materials, capital equipment, interest or profits, royalties, and so on. Therefore, the higher the level of expenditure in Australia the greater the amount of overseas expenditure involved. Expenditure on consumers' goods and services of imported origin has a direct and corresponding effect on overseas expenditure: expenditure on consumer goods locally produced usually requires expenditure on imported materials and equipment to an extent which varies according to the nature of the goods. Expenditure on development involves frequently imports of equipment, materials, etc., as well as payments of royalties and other similar charges.

It is important to note that once full employment has been reached, further increases in expenditure on whatever types of goods tend to result in *almost corresponding* increases in expenditure abroad. Since production here cannot be increased suppliers turn to imports for additional supplies. Thus, at times of high expenditure, it is normal to see in our import statistics substantial sums on account of commodities in which Australia might reasonably be expected to be self-sufficient.

We see then that there is a direct relationship between the levels of expenditure in Australia and the demand for imported goods and services. What are the resources from which this demand can be satisfied? Each year we sell abroad a substantial volume of exports which gives us an international income which enables us to spend abroad. The amount of this income depends on the volume of our export production and the prices the exports command, while the amount of imports we can buy from this income depends upon the cost of imported goods. Our capacity to buy imports depends, therefore, basically upon the scale and efficiency of our export industries and the terms of trade on which we exchange their products for imports, i.e. the relationship between export and import prices.

This basic income can be supplemented by the proceeds of overseas borrowing and the investment by non-Australians of funds in Australia and also by the extent to which we draw on our international reserves. Money lent to or invested in Australia, for whatever purpose the money is initially spent in Australia, adds to the flow of foreign currency available, and thus enables Australia as a whole to purchase correspondingly more imports. Similarly, if we have reserves of gold and other international currencies and are prepared to draw upon them, we can buy more imports than our current export income will purchase. But it is important to remember that international reserves must be accumulated by refraining from spending export income or the proceeds of borrowing and that they can be spent only once.

Consequently, we see that there are definite limits to our capacity to *pay for imports*—limits set by our production of exports, by the terms on which we exchange exports for imports, by the amount we are able to borrow abroad and by the size of our international reserves and our willingness to run them down. But our propensity to *spend* on imports is dependent primarily upon general levels of spending in Australia—levels which at least in the short run are to a large extent independent of our capacity to pay for imports.

It is, therefore, possible that spending in Australia on consumption and on development can rise to levels which exceed our capacity to pay for the resulting imports. In such a situation the first effect is for reserves to be drawn upon to finance the excess imports. If the excess is temporary or is checked naturally or by internal policy measures, the drain on reserves may be halted and perhaps reversed, but there is no fully effective automatic tendency to bring about this reversal. Indeed, a cumulative inflationary process can maintain internal spending at levels which continue progressively to deplete international reserves. If such an inflationary process is not halted, it will become impossible to provide the foreign currencies necessary for the payment of imports at their current price, and import restrictions and exchange controls will have to be applied or intensified.

On the other hand, if internal levels of expenditure are so low that the demand for imports is insufficient to use the international resources becoming available, international reserves could accumulate possibly even to a point where it would appear that the country was being deprived of some of the benefit of its current international prosperity.

Does this mean that if we can so control our domestic expenditure that we just maintain the full employment of our labour and other internal resources, our expenditure on imports will neatly balance our income from exports and overseas borrowing? Not necessarily. Whether we can pay for the imports required by the level of expenditure associated with full employment depends upon our capacity to produce for export and the terms of trade on which we can exchange exports for imports. Largely this is a question of the relationship between internal and external costs—but not entirely. Export industry, particularly if it is agricultural or pastoral, may have a considerable potential for expansion at existing cost ratios, but to make that potential effective may require considerable capital expenditure, time for improvements to become mature and possibly even structural changes such as subdivision of land. These may delay the achievement of international balance under the pressure of high expenditure even if cost ratios are satisfactory. But excessive expenditure associated with over-full employment is bound to put pressure on the international balance in all but the most exceptionally favourable conditions for

the relative prices of exports and imports. Furthermore, a sudden deterioration in the terms of trade may create conditions in which it is impossible to preserve both full employment and an international balance except at a lower level of internal costs.

It is clear, therefore, that if it were necessary to maintain strictly at all times conditions of external financial stability, it would be an exceedingly complex and difficult task, requiring both—

- (a) an appropriate level of internal expenditure; and
- (b) a level of internal costs properly adjusted to a continuously changing relationship between export and import prices.

Fortunately it is possible to build a buffer between the internal economy and the frequent changes in the factors affecting our international balance of payments. We protect ourselves by the maintenance of international monetary reserves which we allow to fluctuate widely. By so doing we are able to ignore minor and passing influences and to give ourselves time to adjust ourselves to more persistent and fundamental changes. But this technique assumes that the pressures on our balance of payments will be sometimes one way and sometimes another. If we fail to bring under control a lack of balance in internal expenditure or to adjust ourselves to fundamental changes in our terms of trade, we can reach a position where we can no longer accept the consequential changes in the amount of our reserves, and import restrictions and exchange control of increasing severity become inevitable.

Fluctuations in the Australian balance of payments are very large by comparison with those of many other countries. Since the 'thirties, therefore, we have come to regard occasional resort to import restrictions and exchange control as almost normal techniques of economic management. They can be very effective in bringing under control expenditure abroad and without doubt they are a useful addition to the techniques available to us. However, they have no effect on the causes of the difficulties. The demand for imports arises out of expenditure in Australia. To prevent that demand becoming effective does not reduce the levels of expenditure but tends merely to concentrate it on domestic resources. Furthermore, this concentration will encourage those who are planning further development. And, if domestic resources are already being used to capacity, this encouragement will intensify the internal pressure and render more probable internal financial instability.

The importance of the international balance of payments in relation to development is well illustrated by our changing experience since the war when we have shown a persistent propensity to spend on development. This propensity arose partly from arrears of development caused by the war but was greatly stimulated by the relative cost advantage enjoyed by Australia as a result of its war-time control of

prices. Since then the steady and rapid increase in population, creating as it does both the need for equipment of great variety and also the market opportunities for new classes of industry, together with technical change in primary and manufacturing industries, has provided a positive urge for developmental expenditure.

After the war our international position was exceptionally strong. Our costs were relatively low and our exports were commanding scarcity prices. Furthermore, we had built up and were still adding to very substantial reserves of international currencies. In these circumstances we were able to proceed boldly with expenditure on development without being conscious of the limits which can be imposed by the balance of payments. Gradually, however, the special advantages of our immediate post-war situation have been reduced as international trade conditions became progressively more normal. Our cost structure gradually rose as price controls were relaxed and continued to rise under the pressure of domestic inflation; prices for primary products fell towards a more normal relationship with prices of imports; and, finally, a major part of our accumulated reserves were used in 1951-2 when a sudden fall in wool prices and a flood of imports struck us simultaneously. They have been again depleted in the last year. We have, therefore, returned to a position where we must take into account the limitations imposed on development by movements in the balance of payments.

5. *General Summary*

It will be seen, therefore, that development is closely interwoven with the factors which affect financial stability. Briefly, the essence of this relationship can be summarized thus:

1. Expenditure on development is a major and variable element in total expenditure and adequate development plans, public and private, are essential to maintain full employment and to avoid the instability associated with deflation.
2. If, however, expenditure on development tends to exceed the resources made available by savings, there will be a corresponding tendency towards rising prices and other aspects of instability associated with inflation.
3. Expenditure on development adds to the demand for imports and can in some circumstances lead to a demand which exceeds our capacity to pay.
4. Capacity to pay for imports is dependent primarily on the output of our export industries and on the terms of trade. In these the relationship of internal to overseas costs may be significant particularly if there is a substantial adverse movement in the terms of trade. A healthy relationship of internal

to external costs cannot be maintained if total expenditure is excessive.

There is, of course, a great variety of possible situations in this complex of relationships and a glance through Australian economic history of the last generation will provide interesting case studies. But for the purposes of this paper it is probably desirable to concentrate consideration on the type of situation which is most relevant to our current conditions and to their probable evolution.

The dominant feature of the present Australian economy is the strength of the urge to development. This is shown not merely in the physical evidences of achievement nor in the statistics which show how formidable a proportion of our resources we devote to this purpose. It is also shown in the mood, the climate of opinion and expectation among those who have decisions to make about development. There is a widespread conviction that Australia is in an active phase of growth and that while checks and interruptions are possible, indeed likely, they will prove temporary.

I would attribute this general sense of growth to the following features of our situation :

1. The determination to increase our population by a steady and substantial flow of migrants—this flow, while imposing its strain on us, provides a continuing basis for expanding production and establishes a steadily expanding need for equipment of all kinds, i.e. it creates both the need and the opportunity for development.
2. Our primary industries are experiencing a technical revolution which, if applied widely and supported by the necessary capital expenditure, offers the opportunity for both greatly increased output and relatively lower costs.
3. The steady policy of industrialization has produced the basis of an industrial community—skilled workers, technicians, managers, basic industrial services and a wider range of supporting forms of production on which further expansion can be based.
4. Overseas industrialists have become increasingly conscious of the possibilities of Australia both as a growing market and as a source of productive capacity.
5. We are gradually evolving a more adequately equipped and skilled market for capital with specialized financial institutions capable of servicing the varied financial needs of the economy.

These factors are strong and apparently persistent and, at least while conditions in the major industrial countries of the world remain buoyant, there seems good reason to expect their continuance. While

judgments of this kind are, of course, dangerous, it seems to me that we can expect this expansionist phase to continue. Therefore, we are more likely to be concerned in the years ahead with the problem of finding the resources to give effect to the plans for development which emerge naturally from the homes, the businesses and the governments of Australia than we are to be concerned with a deficiency of plans with which to keep our people and our resources at work.

In other words, the questions we may have to answer are :

1. How can we increase the resources available for development? And when we have done our utmost—
2. How can we limit our developmental plans so that we do not press against the limits of our internal and external resources to the point of financial instability?

6. *Possibilities of Increasing Resources for Development*

What are the possibilities of adding to our resources for development?

(a) *Increased Production*

Often it is suggested that if we can produce more by increasing our population and by raising our productivity per head we can add correspondingly to our rate of development. It is true that there is scope by these means to increase total production although it may be less than generally believed. The last decade has been a period of remarkable population growth and heavy capital investment, yet it is unlikely that the average increase per year in G.N.P. (apart from the effect of price increases) over that period has exceeded 4 per cent. This of course understates the full effect of population and productivity changes: part of the increase is taken out in increased leisure and also in changes in the nature of goods and services produced. Many of the things on which money is spent as income rises are less likely to be influenced by factors increasing production per head—some forms of entertainment, travel, clothing and other personal possessions, services, etc., are by their nature less subject to economies of mass production than many of the more essential items of production, but their inclusion in production may be more indicative of rising standards of living than mere increases in the value of production per head.

Only a part of the increase resulting from higher production can be applied to development. The newcomers and those whose output is increased by higher productivity will receive corresponding incomes and will spend the major part of them in consumption. Only to the extent that their incomes are saved are additional resources made available for development. If they save the same proportion of their

incomes as the existing population, a 4 per cent increase in G.N.P., which is perhaps more than we can expect year in year out, can be expected to give a potential increase of only about 4 per cent in the volume of resources available for development. This at present value of production would mean an increase for all investment expenditure of about £40 million per year.

Another qualification associated with increasing population is the equipment needs of the new arrivals. The capital equipment required to service our population at present standards, taking into account housing, domestic equipment, schools, hospitals and other social equipment, and transport, power, factories, shops and offices and other production equipment represents a substantial amount per head.

Unless the economy already has equipment adequate to a population greater than the present, it will need to devote a part of its development resources to equipping the new population at existing standards before it can carry its development to the stage of raising the amount of equipment per head. In other words, a larger population is in a sense an alternative to a better equipped population. If we set ourselves too high a target rate of growth of population, we may be forced to accept a slower rate of improvement in the standard of our equipment per head.

These qualifications do not suggest that it is not of great importance to increase our population and to raise our productivity, but merely that we should recognize the limitations to what we can hope to achieve by these means in the way of more rapid development.

(b) *Increased Savings*

Another hopeful line may be in the possibilities of greater savings. Here we start from a position in which Australians' performance is good. Despite our reputation for extravagance we are among the thriftiest people in the world. Our savings per head can be matched only in such countries as Canada, New Zealand, and the United States of America. To some extent this reflects our high standards of income and partly the relatively modest and stable consumption habits of our primary producers, but it reflects also the effectiveness of our institutions for collective savings—savings banks, life assurance societies, pension funds, etc.—as well as the practice of companies of ploughing back for expansion a substantial part of their profits.

The recent rapid growth in the use of hire purchase facilities has had the effect of diverting more savings to the provision of consumers' durable goods which contribute less than other forms of equipment to future standards of production. This diversion is at its greatest while the use of hire purchase facilities is growing and a continuance of the growth at the same rate as the last two years could limit significantly the resources available for development.

Can savings be increased from their already high level? Something could perhaps be done by changes in the tax structure so as to favour the saver as against the spender and the company which ploughs back its earnings as against the company which distributes. Colin Clark has made an ingenious plea for taxation of expenditure rather than of income and recent work in the United Kingdom may help overcome the frightening administrative difficulties which such a plan offers. The idea is certainly worth examination. The extension of pension schemes into industries and occupations employing workers on a weekly basis has become a widespread feature of United States industry and, if developed here, could tap a field of income with great saving potential. So far our trade union leaders have shown much less interest in such plans than their American counterparts but, if the means test for old-age pensions is sufficiently modified, their interest may be quickened.

Saving can in a sense be imposed on people by taxation and, indeed, to the extent that developmental work is financed from revenue it may be said that this is already being done. Theoretically it would be possible to extend this principle further and development would benefit, provided taxpayers responded by reducing their consumption rather than their own savings. The precise effect would be difficult to assess but the ultimate limitation is the willingness of the community to allow itself to be taxed.

There are clearly possibilities here, but we would be unwise to expect that we could so change consumption and saving habits as to add greatly to the resources for development even in the long run. Even now we may be fighting a losing battle with the wiles of the advertiser.

7. Possibilities of Increasing Capacity to Pay for Imports

Increased production or greater saving could contribute to development by giving to it greater domestic resources. We have seen, however, that the need to pay for imports associated with expenditure increased by expenditure on development may also impose a restraint on our plans. We must look, therefore, at what can be done to increase our capacity to pay for imports.

(a) Overseas Borrowing

One of the quickest methods of adding to our resources for development, if it is practicable, is to borrow abroad—either by public authority loans or by encouraging private investors to bring their funds to Australia. These have added substantially to our development potential in the last decade.

I have mentioned earlier that there is a growing interest in Australia as a field for investment. This has been reflected in a substantial

flow of private capital and in the governmental loans from the International Bank for Reconstruction and Development and other overseas sources. Most of this has come with little direct persuasion and it may be that, if we sought to do so, we could make Australia an even more attractive field of opportunity for overseas capital.

But here there are three problems. First there is a danger that in increasing our borrowings from overseas we will so increase the claims which non-Australians have on our production that they will become embarrassing, either in relation to our total production or in relation to our export income. However, this is not a serious problem for Australia. The service of our foreign-owned capital does not represent a major part of our international income and we could increase it without great concern—particularly if we could see the capital being used to increase the international income itself.

Secondly, there is the problem of the uncertainty in the flow of foreign capital. An economy receiving capital from overseas gradually gears the structure of its production to that flow. If it is suddenly interrupted (as it was for instance in 1929), there may be acute embarrassments and possibly the need for substantial changes in the pattern of domestic production. Arrangements of the kind which have run over the last decade between Australia and the I.B.R.D., by which a series of loans was arranged, represents a useful device to offset this danger, but it is difficult to see this technique being widely applied in the private sector, although the steady ploughing back of profits earned has the same sort of effect.

Thirdly, there is the political problem of how far we wish to extend foreign ownership of Australian assets and enterprises. Generally, our experience with non-Australian owners of enterprises in this country has given little cause for concern, but there is room for wide differences of opinion on how far it is wise to go.

Finally, of course, the possibilities in this field are limited by what overseas institutions and investors are prepared to invest in Australia. It would be easy to be over-optimistic on this point.

(b) *Increasing Export Production*

There is no doubt that expenditure on improvements and major irrigation and other developmental works, together with the application of existing and growing technology, is expanding and can greatly expand our export production. However, a number of factors limit the rate at which this can be done:

- (1) the scope for the opening up of unused lands is not great and where it exists requires slow and expensive preliminary development;

- (2) the use of the new technology requires capital expenditure, new knowledge and time;
- (3) some of the initial increase in productivity is generally (and wisely) taken out in the greater security of better rotations, safer stocking, and other aspects of better and safer farming rather than in increased output;
- (4) farm development is traditionally financed from internal sources—ploughing back of profits and bank borrowing against equity already built up. It is difficult for farmers, however good, to find finance for *potential* production.

There is need for thought on how these limiting factors can be minimized since our need for exports is great and day by day our growing population is eating into our export surpluses.

(c) *Import Replacement*

Since the expansion of our basic export industries must be a slow process, it is natural that attention should be concentrated on the possibilities of directing development at the replacement of imports by local production. To the extent that this can be achieved development serves a double purpose. In a sense it provides some part of its own requirements of imports by the savings which it makes by meeting other people's needs for goods previously imported. Furthermore, by diversifying our production, it reduces our dependence on the income from a few major export industries and thus adds to the insulating value of our international reserves. There is also the additional advantage that most import replacing production is not limited by the sort of factors which restrain the growth of our primary industries. Sources of capital are more readily available, up-to-the-minute overseas techniques can be acquired and used, and production at full rate of flow follows promptly on capital expenditure.

There is no doubt that the concentration on import replacement which has characterized our development since the war has a rational justification and can contribute greatly to solving the international problems created by the development itself. But there are qualifications. The production locally of goods previously imported is not a net gain—since almost invariably the production itself involves imports of materials, components and capital goods and frequently requires payments of other sorts—capital charges, royalties, etc. The net saving in import expenditure may be small and, indeed, it is possible in the period of expansion, when capital equipment is being imported, for the developing industry to make greater payments abroad than it saves. Moreover, it is possible that we could build up a pattern of import requirements of industry which would be very inflexible in the face of a serious deterioration in our terms of trade, so that restriction

of imports would fall directly on the means to production and employment.

These problems may be the greater if development is unduly concentrated on production of final consumers' goods running ahead of the base on which they stand—the production of materials, fuels, power, transport and the like. There may be some reason to believe that our own development is somewhat top heavy in its superstructure in this way.

8. *Means for Limiting Development Expenditure*

There is undoubted scope for extending the practicable rate of development by action in the fields I have run through briefly. Yet if I am right that we can reasonably hope for a continuance of the factors which are stimulating our development, we must expect to find ourselves pressing against the limits set internally by the resources available after consumption demands have been met and externally by the pressure of expenditure on the international resources available for imports. We must expect therefore that our governments and banking institutions will from time to time find it necessary to restrain development so as to preserve reasonable financial stability. Are effective measures practicable?

Expenditure on development may be undertaken by governments and other public authorities, or by private firms and individuals. In Australia developmental expenditure by public authorities is brought under review in the annual budgets and loan programmes and there is some co-ordination at the Loan Council. It has been shown that this co-ordination can effectively discipline these programmes—the growth of their aggregate has in recent years been reasonably held, taking into account the growth of the national production. Here there is no problem of knowledge or technique, but a problem of judgment and will.

Private expenditure on investment presents a much more difficult problem. It is diverse in character and widely distributed. Knowledge of its prospective changes is imperfect and there are no means whereby those conceiving and executing plans can become aware of the effect of the plans of others or be forced to reconcile conflicting plans.

In many countries governments seek to bring about such a reconciliation by control over investment projects or by control of capital issues. In Australia, except in war or the threat of war, such measures are constitutionally impracticable. We do have at our disposal the instruments of budget policy and monetary and banking policy. Budgetary policy is the basic instrument of economic policy and it can be used to exercise restraint or to provide a stimulus to expenditure. To some extent the restraint or stimulus can be directed so as to affect

particular forms of expenditure such as expenditure on development but there are limits. Fundamentally the public sees the budget as the means the government uses to finance its activities and of distributing the cost equitably among its citizens. Too great a variation in the content of the budget for reasons of economic policy impairs the plain man's basis of judgment of its reasonableness and its equity. Above all the budget cannot be frequently and violently altered. Nevertheless Australian history has shown the value of a soundly conceived budget policy and the dangers of irresponsibility towards basic economic problems in its formulation.

Monetary and banking policy too have their part to play and something is undoubtedly achieved by them. However, our less fully developed money market and our conviction that interest rates should be kept low render our techniques less complete, and the influence of monetary and banking policy probably less effective, in the restraint of a tendency to over-spending than in some other countries.

These are issues which will be explored no doubt by others. I must however confess that I feel there is danger to the Australian economy if we cannot evolve ways of exercising effective restraint on our healthy but exuberant tendency to want to do more than our resources will permit.

9. *Conclusions*

Finally, could I bring together the broad conclusions which I feel emerge from this survey?

1. There seems good reason to believe that the conditions underlying Australia's recent rapid development are soundly based and that the urge to expansion will continue.

2. There are, however, real limits both internal and external to the rate of development Australia should undertake if it is to maintain financial stability.

3. When all possible has been done to push back these limits, we will be able to achieve much but probably less than most of us would like.

4. We are likely therefore to be faced from time to time with the need to restrain developmental plans, both public and private.

5. There are significant weaknesses, partly constitutional, partly technical, but partly arising from our own attitudes, in our capacity to restrain excessive expenditure on development especially when the initiative lies predominantly in the private sector of the economy.

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EXTERNAL ECONOMIES IN ECONOMIC GROWTH

The concept of "external economies" has had a remarkable career on the stage of economic theory. For several decades, the early promise of its debut in Marshall's *Principles* remained unfulfilled. The critics were beginning to jeer about "empty boxes" when Allyn Young, in 1928, launched it in a scintillating new role. This charmed the connoisseurs but led to no new engagements until, a few years ago, Economic Development became the rage. Overnight, "external economies" emerged as the prima donna, appearing in half a dozen new parts. No wonder such late success is threatening to turn its head. The time has come to sit back and reflect quietly what time and popular acclaim have done to the young star of fifty years ago, and what its future may be.*

1. *Historical*

(a) *Marshallian Partial Equilibrium Analysis*

Marshall, who invented the concept, defined "external economies" as "those dependent on the general development of the industry";¹ or, in Viner's more precise phrase, "those which accrue to particular concerns as the result of the expansion of output by their industry as a whole, and which are independent of their own individual outputs".²

Marshall's interest in external economies was twofold: First, together with internal economies, they deserved study as one of the chief sources of economic progress, the material aspects of man's welfare. Secondly, and more particularly, they provided a partial answer to the problems posed for partial equilibrium analysis by the phenomenon of increasing returns. The distinction between "internal" and "external" economies could not overcome all "the difficulties which beset the theory of equilibrium in regard to commodities which obey the law of increasing return",³ especially the indeterminacy of the long-period supply price of a commodity. But "external economies" were at least immune to the awkward implication of "internal economies"

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1. A. Marshall, *Principles of Economics*, 8th ed. (Macmillan 1920), p. 266.

2. J. Viner, "Cost Curves and Supply Curves", reprinted from *Zeitschrift fuer Nationaloekonomie* (1931) in American Economic Association, *Readings in Price Theory* (Irwin 1952), p. 217.

3. Marshall, *op. cit.*, App. H, p. 805.

that "whatever firm first gets a good start will obtain a monopoly of the whole business of its trade in its district".⁴ It was the fact that increasing returns so largely accrued as external economies, as much as the limits set to the growth of individual firms by loss of entrepreneurial "elasticity and progressive force",⁵ which seemed to make it possible to reconcile increasing returns and competitive equilibrium.⁶

Scattered throughout the *Principles*, there are broad references to external economies as a source of economic progress, but wherever Marshall distinguished carefully between internal and external economies, the context was partial equilibrium analysis of the competitive model. The limiting assumptions and objectives of this approach account for the relatively narrow definition and scope of what we now know as "strictly Marshallian" external economies.⁷ What mattered, in this context, was merely that such economies accrued to the individual firm independently of the size of its own output, and that they had the effect of reducing the costs of production of the "representative" firm producing its output from plant of optimum scale for that output. The competitive equilibrium model necessarily required the assumption of a given demand curve for a given product of an industry,⁸ and consequently, since changes in factor incomes would affect the demand curves, also the further assumption of perfectly elastic supply of factors of production.⁹ Marshall recognized, of course, that cost reduction through external economies implied an increase in the "efficiency of . . . capital"¹⁰ and would, therefore, stimulate investment; but this was not the point which interested him in this connection.

Marshall's examples of external economies, in the main, fit into this pattern. The external economies which accrue to a firm from the growth of the industry are chiefly matters of "improved organization":¹¹ "improved methods or machinery which are accessible to the whole industry";¹² "advances made by subsidiary industries";¹³ "developments of mechanical appliances, of division of labour and of the means of transport, and improved organization of all kinds";¹⁴ especially those which "result from the growth of correlated branches of industry which mutually assist one another, perhaps being concentrated in the same localities",¹⁵ such as the development of "hereditary

4. *Ibid.*, p. 459, n. 1.

5. Marshall, *op. cit.*, p. 316.

6. Cf. Allyn Young's reference to "Alfred Marshall's fruitful distinction" as, among other things, "a safeguard against the common error of assuming that wherever increasing returns operate there is necessarily an effective tendency towards monopoly" ("Increasing Returns and Economic Progress", *E.J.*, Dec. 1928, p. 527).

7. P. N. Rosenstein-Rodan, "Problems of Industrialisation of Eastern and South-Eastern Europe", *E.J.*, June-Sept. 1943, p. 206.

8. Joan Robinson, *The Economics of Imperfect Competition* (Macmillan 1934), Appendix on "Increasing and Diminishing Returns", p. 341, n. 1.

9. *Ibid.* 10. Marshall, *op. cit.*, p. 318. 11. *Ibid.*

12. *Ibid.*, p. 615. 13. *Ibid.* 14. *Ibid.*, p. 808. 15. *Ibid.*, p. 317.

skill", the growth of "subsidiary trades . . . supplying it with implements and materials", and "the economic use of expensive machinery";¹⁶ also "those connected with the growth of knowledge and the progress of the arts",¹⁷ e.g. in "matters of Trade-knowledge: newspapers, and trade and technical publications".¹⁸

Subsequent writers who dealt with external economies in the same context necessarily retained the same narrow assumptions and definition.¹⁹ Mrs. Robinson, who made the most thorough examination of increasing returns in the context of partial equilibrium analysis, and in doing so made explicit the assumptions which had largely been implicit in Marshall's discussion, defined external economies in strictly Marshallian terms: "When a new firm enters the industry it may enable all the firms to produce more cheaply so that, while each produces at its minimum average cost, the cost of the minimum is reduced."²⁰ The main illustrations she had in mind were the case "where machinery can be bought more cheaply when the industry presents a larger market to the machine-making industry" and where "a large labour force is accustomed to work at a certain trade" and develops "a traditional skill".²¹

(b) *Allyn Young: Increasing Returns and Economic Progress*

Some years before Mrs. Robinson elaborated the Marshallian concept of "external economies", Allyn Young, in a famous article, had given the concept a considerably wider meaning. Allyn Young started out from Adam Smith's dictum that "the division of labour is limited by the extent of the market". But he pointed out that "in an inclusive view, considering the market not as an outlet for the products of a particular industry, and therefore external to that industry, but as the outlet for goods in general, the size of the market is determined by the volume of production".²² Looking not at one industry but at the economy as a whole, supply creates its own demand. Any increase in aggregate output anywhere widens the market for goods in general, provided there is "some sort of balance, that different productive activities [are] proportioned one to another",²³ and thus creates new opportunities for further increases in output by further division of labour and in other ways. In other words, every increase in aggregate output, by widening the market, yields "external economies" to firms somewhere in the economy.

This source of external economies, to which Allyn Young was inclined to attribute "the leading role in that continuing economic

16. *Ibid.*, p. 271. 17. *Ibid.*, p. 266. 18. *Ibid.*, p. 284.

19. Especially the articles by Clapham and Robertson in the "empty boxes" debate, reprinted in *Readings in Price Theory*, Chs. 5 and 7; Viner, *op. cit.*; and Joan Robinson, *op. cit.*

20. Joan Robinson, *op. cit.*, p. 340 f. 21. *Ibid.*, p. 341.

22. Allyn Young, *op. cit.*, p. 533. 23. *Ibid.*

revolution" of the last two or three centuries,²⁴ was one which, in its nature, could find no place in Marshallian partial equilibrium analysis. The latter, by confining attention to one industry and assuming a given demand curve (for a given product), inevitably precluded consideration of external economies resulting from shifts in demand curves.²⁵ If these external economies were to be brought into account, it was necessary to widen the concept to include all cost reductions accruing to firms (or industries) from expansion of output of goods and services in general.²⁶

Allyn Young's concern with external economies was as a source, perhaps the most important source, of economic progress. His reinterpretation of external economies was an immensely illuminating contribution to our understanding of economic progress as a cumulative process which feeds on itself. But it is important also to note the limitations of Allyn Young's approach.

First, as Allyn Young hinted here and there, the process by which an expansion of the market makes it economical to carry further the division of labour, and particularly the adoption of "capitalistic or roundabout methods of production",²⁷ is not necessarily the only mechanism which yields external economies in his wider sense and makes for cumulative economic growth. There are references to "changes of a qualitative nature", "new products appear, firms assume new tasks, new industries come into being",²⁸ But these other mechanisms are not analysed. He merely refers, rather vaguely, to the fact that "every important advance in the organization of industry, regardless of whether it is based upon anything which, in a narrow or technical sense, could be called a new 'invention', or involves a fresh application of the fruits of scientific progress to industry, alters the conditions of industrial activity and initiates responses elsewhere in the industrial structure which in turn have a further unsettling effect",²⁹

Secondly, the only possible source of market-widening increases in output which give rise to external economies, in Allyn Young's argument, is a rise in productivity, i.e. in the efficiency with which existing resources are employed. The possibility that the initial increase in output might result from the employment of hitherto unemployed factors of production does not enter his argument because, thirdly,

24. *Ibid.*, p. 536.

25. Much of Allyn Young's concern in his article was to point out the deficiencies of Marshallian equilibrium analysis for the study of economic growth, because of its "partial" and "static" character.

26. Marshall did not always interpret external economies in the narrow sense of economies due to growth of a single industry; cf. his first reference to external economies as those which "depend chiefly on the aggregate volume of production in the whole civilised world" (*op. cit.*, p. 266); but it was the narrow concept which interested him.

27. Allyn Young, *op. cit.*, p. 539. 28. *Ibid.*, p. 528. 29. *Ibid.*, p. 533.

and not perhaps unreasonably in his context of long-run development, he accepts Say's Law of Markets without the qualifications which Keynes added a few years later.

Finally, Allyn Young's interest is confined to the effect of an increase in the market in reducing costs (thus increasing productivity and output and widening the market further). Like Marshall, he is well aware that cost reduction stimulates investment—indeed he lays special stress on cost reduction through the adoption of more capitalistic methods of production—but, partly because he is concerned only with the product effects, not the process (money income) effects, of investment, the stimulus given to investment by a widening of the market is not his primary concern.

(c) *Economic Development: Inducements to Invest*

Formally, the concept of "external economies" used in recent discussion of problems of economic development of under-developed areas conforms to Allyn Young's definition. But there has been yet another change of context and emphasis so drastic as virtually to give the concept a new meaning.

To the author's knowledge, the concept was first introduced into discussion of economic development by Professor Rosenstein-Rodan, in his well-known article of 1943. He concisely explained the context in which the concept of "external economies" has been employed in relation to economic development ever since: "Existing institutions of international investment are inappropriate to the task of industrialization of a whole area. They deal with too small units, and do not take advantage of external economies." For instance, it is "not profitable for a private enterprise to invest in training labour", but "it is a good investment for the bulk of industries to be created when taken as a whole. . . . It constitutes an important instance of the Pigovian divergence between 'private and social marginal net product' ".³⁰

The emphasis now is on the effect of external economies, not so much in reducing costs, as in stimulating investment; and the significance of external (as contrasted with internal) economies is that they cause divergence between private and social marginal product. They are thus advanced as a major explanation of the paradox that private investment does not appear to be attracted by the investment opportunities offered by capital-poor under-developed countries where the marginal productivity of capital might be expected to be high. "The technical opportunities may be great; the physical increase in output may be spectacular compared with existing output, but value productivity is limited by the low purchasing power of the people. . . . The

30. *Op. cit.*, p. 204 f.

notion of 'external economies' seems applicable here, though not quite in the sense in which Marshall commonly used it."³¹

While "external economies" here still seem to mean the same as to Allyn Young, a new interpretation has really crept in. The difference is not merely that Allyn Young used the concept to explain the actual process of cumulative progress in the advanced and still growing economies, while here it is used to account for the failure of this cumulative process to get under way in the relatively stagnant under-developed areas.³² The more important change lies in the new emphasis on the significance of external economies for the inducement to invest. In place of increasing returns, in the sense of falling costs with increasing output, we are now concerned with mutual support between acts of investment in different fields, i.e. all cases where investment stimulates rather than discourages further investment,³³ and external economies, instead of covering those cases of increasing returns which occur independently of the output of individual firms (or industries), now cover those cases where the favourable repercussions of investment do not (fully) accrue to the investor in a given field.

The prime example of external economies, in this sense remains Allyn Young's type: "Each of a wide range of projects, by contributing to an enlargement of the total size of the market, can be said to create economies external to the individual firm or industry."³⁴ "Most industries catering for mass consumption are complementary in the sense that they provide a market for, and thus support, each other."³⁵

But these are by no means the only cases where investment creates new investment opportunities elsewhere. "It might easily happen that any one enterprise would not be profitable. . . But the creation of such an enterprise, e.g. production of electric power, may create new investment opportunities and profits elsewhere, e.g. in an electrical equipment industry."³⁶ Again, "external economies are often invoked as an argument in favour of a different programme of industrialization. . . . Investment should concentrate at the start on . . . 'basic industries' . . . the normal multiplier effect will naturally lead to further industrialization according to the advocates of this programme".³⁷ Or take this illustration of the external economies yielded by investment in an irrigation project: "Irrigation brings closer settlement. Denser settle-

31. R. Nurkse, *Problems of Capital Formation in Underdeveloped Countries* (Blackwell 1953), p. 14. Nurkse, by a slight anachronism, actually attributes to Allyn Young the new formulation that "the *inducement to invest* is limited by the size of the market" (*ibid.*, p. 6, n. 1, italics supplied).

32. Cf. H. W. Singer, "Economic Progress in Underdeveloped Countries", *Social Research*, 1949, p. 9: The situation of underdeveloped countries "illustrates, in reverse, . . . the prevalence of cumulative processes. . . . One thing leads to another, but nothing leads to nothing."

33. Cf. L. M. Lachmann, "Investment Repercussions", *Q.J.E.*, Nov. 1948.

34. Nurkse, *op. cit.*, p. 14.

35. *Ibid.*, p. 11.

36. Rosenstein-Rodan, *op. cit.*, p. 207.

37. *Ibid.*, p. 208.

ment may make worth while the construction of a railway. This reduces transport costs and enables production to be further expanded. Processing industries may be attracted by the increased production, thus increasing the regional population and creating a local market for food and the services of tertiary industries, etc., etc."³⁸ Yet another example is that attributed by Rosenstein-Rodan to Allyn Young: the construction of a suburban tube line which yields external economies in the form of capital appreciation of adjacent land and buildings.³⁹ The term "external economies" has even been transferred from the economies to which investment in a new industry or new capital equipment may give rise to the new industry or capital equipment itself: "The most productive form of development is the systematic creation of those indispensable external economies in economic production, especially in the fields of transport and power."⁴⁰

There is no need to extend the list of illustrations at this point. The list already given, though by no means exhaustive, shows that the new meaning which the concept of "external economies" has acquired is very wide, certainly covering a number of quite distinct mechanisms by which investment in one field may give rise to new investment opportunities elsewhere. In the second half of this article, an attempt will be made to examine the new concept of "external economies" more closely in relation to the earlier ones, and to disentangle the various mechanisms which may give rise to "external economies" in any of the various meanings of the term.

2. *Analytical: Increasing Returns*

Let us begin with a recent lucid statement on increasing returns: According to "orthodox theory, given the structure of demand for final goods and the 'state of the arts', the marginal productivity of capital will be high or low depending on the proportions of factors. . . . It will, therefore, vary directly with supplies of labor and other natural resources and inversely with the stock of existing capital. An increase in the supply of a factor, however, brings an increase in aggregate output in addition to a change in factor proportions. And with an increase in scale of output there are increases in efficiency due to improvements in the organisation of industry. That is to say, there are increasing returns . . ."⁴¹

Since, given (a) the structure of final demand, (b) the "state of the arts", (c) supplies of labour and other natural resources, and

38. G. O. Gutman, "Investment in Development Projects", paper read at the Canberra Meeting of the Australian & New Zealand Association for the Advancement of Science, Jan. 1954 (mimeographed), p. 10.

39. Rosenstein-Rodan, *op. cit.*, p. 207.

40. Singer, *op. cit.*, p. 6. This last would seem to be an extension of the concept which clarification of the meaning of "external economies" should eliminate from the vocabulary of economic development.

41. M. Abramovitz, "Economics of Growth", in B. F. Haley (ed.), *Survey of Contemporary Economics*, Vol. 2 (Irwin 1952), p. 154.

(d) the existing organization of industry, the application of additional amounts of capital (investment) must yield diminishing returns, it follows logically that the occurrence of constant or increasing returns must be due to incidental changes in one of these four parameters as the scale of output increases.

At the same time, the old truth that you cannot get a quart out of a pint pot suggests that an increase in output must, somehow or other, be due to an increase in input, however surreptitious and well-hidden. The problem of accounting for increasing returns, therefore, resolves itself into tracking down increases in "inputs" underlying these changes in one or the other of the four parameters which may give rise to increasing returns.

(a) *Organization of Industry*

It will be convenient to start with the fourth, the "organization of industry", because this is the only one which was not held constant in Marshallian partial equilibrium analysis and because here, therefore, most of the work has been done for us, by Marshall and his followers, most thoroughly by Mrs. Robinson.

"It remains to inquire how increases in efficiency arise. They arise because the factors of production, in the world as we know it, consist of indivisible units, each of which is not equally well adapted to performing all the tasks required in production. If all the factors of production were finely divisible, like sand, it would be possible to produce the smallest output of any commodity with all the advantages of large-scale industry. But actually the factors consist of men; . . . instruments of production each of which, for technical reasons, must be of a certain size; and land, which is usually divisible, but which sometimes, for technical reasons, cannot be divided without limit. It is therefore impossible for an industry to equip itself to produce one unit of a commodity without immediately providing capacity to produce more than one unit."⁴² Indivisibility of specific factors accounts for increasing returns because, if production on a small scale requires the use of an indivisible specific factor, and this factor "has a certain cost which must be incurred whether it is fully utilized or not, the average share of each unit of output in this fixed cost" will fall as output increases.⁴³

Here, therefore, our problem is easily solved: the additional "input" which accounts for increasing returns is represented by fuller

42. Joan Robinson, *op. cit.*, p. 334.

43. *Ibid.* Technical indivisibility, as Chamberlin has been at pains to emphasize ("Proportionality, Divisibility and Economies of Scale", *Q.J.E.*, February 1948), can of course be partially overcome by such devices as hiring factors for fractional periods. It is clear also that technical discontinuities are not always what they seem: the reason why a certain machine is never manufactured below a minimum size is usually not that to do so would be technically impossible, but that it would be inefficient, i.e. the machine would be more costly to run in terms of expenditure on repairs, fuel, materials, etc.

utilization of an indivisible factor. This case clearly accounts for a great many instances of increasing returns; not only for all those cases of internal economies where an increase in output spreads the overhead costs of single productive units, such as a piece of machinery, or a manager, or a skilled worker; and for all such external economies as falling costs of transport services provided by an existing railway network as (say) agricultural output in the area expands; but also for such benefits of specialization and division of labour as Adam Smith's "advantage gained by saving the time commonly lost in passing from one sort of work to another"⁴⁴ and the similar gains in productivity from "improvements in the organisation of industry" recommended by modern time-motion experts.

But not all economies of scale traditionally regarded as due to "improvements in the organisation of industry" can be thus accounted for. As Mrs. Robinson points out, following Adam Smith and Marshall, "the possibility of increasing returns is widened by the fact that various units of factors are adapted to performing different tasks. Men differ in their natural abilities, and can acquire skill when they concentrate on a single task".⁴⁵ The economies of scale which accrue through specialization as workers acquire "dexterity" at a task or the external economies which accrue to firms in a growing industry through the acquisition of a "traditional skill" by the working population of a district can hardly be explained by "fuller utilisation" of existing productive units. They arise from improvement in the *quality* of the available factors of production.

(b) *Supplies of Complementary Factors*

It seems, therefore, that we have already moved on to changes in another of our four parameters, "supplies of labour and other natural resources". But can we treat an improvement in the *quality* of labour as an increase in the supply of labour? We here confront an awkward problem which has bedevilled value theory at any rate since Ricardo: the non-homogeneity of the so-called "factors of production". Mrs. Robinson, like others before her, tried to deal with this in terms of "corrected natural units"; but, as she admitted later, this "was a mere aberration, and no genuine solution is possible which treats non-homogeneous factors as though they were homogeneous".⁴⁶ If we define a "factor" in the only way it can be precisely defined, as a group of productive resources "such that within each group the elasticity of substitution between units is infinite, while between factors it is finite or zero",⁴⁷ we must face the fact, as one of the basic facts of economic

44. *Wealth of Nations*, Book 1, Ch. 1, quoted by Joan Robinson, *op. cit.*, p. 336.

45. Joan Robinson, *op. cit.*, p. 335.

46. Joan Robinson, "Rising Supply Price", reprinted from *Economica*, 1941, in *Readings in Price Theory*, p. 236, n. 8.

47. *Ibid.*, p. 236.

life, that there is a multiplicity of "factors", and that production, according to the techniques available in each field at any time, requires different combinations of selected groups of some such specific "factors".

It follows that anything which improves the quality of the other (traditional) factors with which capital is to be combined in production, or which creates additional units of specific "factors" not previously available, represents a change in the parameter "supplies of labour and other natural resources" and may increase the marginal productivity of capital, as compared with what it would be if this parameter could be assumed to remain constant. Any such change which occurs in consequence of an increase in the scale of output, therefore, may be a source of increasing returns.

Moreover, once the heterogeneity of the traditional factors is admitted, the available factor endowment, which must remain constant for the orthodox conclusion to remain valid, includes not merely available supplies of labour and other natural resources, but also available supplies of *specific* capital equipment. When the cost of wheat production falls because expansion of wheat output spreads the overheads of an *existing* railway network over a larger volume of traffic, increasing returns can be attributed to fuller utilization of existing productive units; but when expansion of wheat farming in an area stimulates the construction of a railway, not hitherto economical, the resulting fall in transport (and therefore farm) costs cannot be wholly explained in this way; it is clearly due in part to a change in the "factor endowment", in the form of additional capital equipment in transport.⁴⁸ So long as investment is conceived as "simple growth of a stock of homogeneous capital",⁴⁹ each additional unit of capital, by definition, competes with the existing stock, and the marginal productivity of capital necessarily declines as the stock of capital grows—given the structure of demand for final goods, the "state of the arts", and supplies of labour and natural resources. But if the availability of specific forms of capital equipment constitutes one aspect of the "factor endowment" which partially determines the marginal productivity of capital, the difficulty in reconciling this axiom with increasing returns disappears.⁵⁰

48. This part of the fall in transport costs is, of course, no greater than that which would result from the investment of an equal amount of additional complementary capital in horses and buggies.

49. Lachmann, *op. cit.*, p. 698.

50. We can, if we like, express this fact in terms of the concept of "complementarity", as in the statement that the effect on the marginal productivity of capital of "a given act of investment will depend on the power of the newly created capital goods to add to or detract from the income-earning capacity of other capital resources, either existing or planned. And this effect will in its turn depend on the degree of complementarity or substitutability which exists between the new capital goods and other capital goods, already existing or about to be created" (Lachmann, *op. cit.*, p. 699). But such a statement has no explanatory value: to say that "specific" factors are "complementary" is, of course, tautological.

Clearly, here lies a major part of the explanation of the paradox of economic development, the failure of capital to "flow from countries with high to countries with low ratios of capital to other resources".⁵¹ The relative factor endowment of different countries, which determines the marginal productivity of capital, is not adequately described in terms of the ratio of "capital" to "labour" and "natural resources". Because of complementarity between different forms of specific capital equipment, the marginal productivity of capital is very likely to be higher in rich countries endowed with a large and varied stock of capital equipment than in poor under-developed countries. As has often been pointed out, one reason why under-developed countries attract little capital is their lack of complementary capital equipment in basic industries, transport and power, and in "social overhead capital".⁵²

There is some danger in extending the meaning of "factor endowment" too greatly.⁵³ But it is hard to see any logical reason for explaining a high marginal productivity of capital in terms of relative abundance of complementary "labour" and "natural resources" and refusing to explain the high marginal productivity of capital in developed, as compared with under-developed, countries in terms of the relative abundance in the former, not only of complementary forms of capital equipment, but also of human resources of high quality (health,

51. Abramovitz, *op. cit.*, p. 155.

52. Cf., e.g. H. W. Singer, "Obstacles to Economic Development", *Social Research*, Spring 1953.

53. Cf. Samuelson's comments on the "limitations of factor proportions analysis" in international trade theory ("International Trade and the Equalisation of Factor Prices", *E.J.*, June 1948, pp. 180 ff.): "It would be artificial in the extreme to explain any such empirical case by saying that 'knowledge' is 'scarce' in the one place relative to the other. At best this is a crypto-explanation; at worst it ignores the play on words involved in the fact that the term 'factor of production' is used in two or more quite different senses: (a) as a concrete input item . . . ; and (b) as a condition which has a bearing upon production. . . . Knowledge is *not* an input such that the more you use of it, the less there is left." True, but knowledge may be a "factor" in the same sense as a dam which costs something to produce but does not wear out and whose creation increases the electricity-generating capacity of a country. A distinction which can validly be drawn, and which is useful in the theory of growth, is between those "conditions which have a bearing upon production" which can be augmented (or depleted) by man, such as technical knowledge (or mineral resources), on the one hand, and those which cannot, such as (as yet) climate. The former are potentially dependent variables in a model of economic growth, the latter are not. Whether we choose to include the former in our definition of "factors of production" is a matter of taste. Cf. also Meade's distinction between "unpaid factors" and "creation of atmosphere" ("External Economies and Diseconomies", *E.J.*, March 1952). Improvement in the state of education or technical knowledge may actually provide a better illustration of the latter than Meade's own illustration of rainfall; his claim that "if in the district in question the amount of land, labour and capital devoted to, say, wheat-farming were to be increased by 10 per cent, the output of wheat would also be increased by 10 per cent even if the rainfall were to remain constant" (p. 61) is surely valid only if "rainfall" is (question-beggingly) measured in terms of inches per acre, not if it is measured in gallons.

skill, know-how, adaptability, etc.) and other factors which contribute to efficiency in the production of particular goods and services, such as efficient legal, financial and governmental institutions.⁵⁴ Wherever an increase in aggregate output increases "supplies of complementary factors" in this sense, we can expect to meet increasing returns.

Granted that the investment of additional capital may yield increasing returns because it may incidentally stimulate an improvement in quality or increase in quantity of complementary factors, it is still necessary to reconcile this fact with the inescapable truth that you cannot make something out of nothing. What is the source, in terms of additional "input", of the additional output which accrues where increasing returns result from improvement in the supply of complementary factors?

In quoting, above, the illustration of external economies in transport resulting from an increase in farm output, we made a distinction which is not to be found in any of the discussions of increasing returns by writers in the Marshallian tradition: the distinction between increasing returns due to fuller utilization of *existing* equipment, and increasing returns due to construction of *new* equipment, not hitherto economical. The source of the much greater economies in the latter case is, of course, the capital invested in the new railway. Marshall and his followers habitually ignored this distinction and took an adequate supply of capital for granted, because, in their context of particular equilibrium analysis, all that mattered was the fall in the costs of transport to individual farmers. This clearly will not do when the phenomenon of increasing returns is related to economic growth of a whole economy. In all cases where increasing returns are due to the creation of complementary capital equipment, the realization of increasing returns requires not merely that investment in such capital equipment shall be economical (profitable) but also that an adequate supply of capital both as real saving and as investible funds is in fact available.

This, in turn, has a further implication. It suggests that the concept of increasing returns (and, consequentially, of external economies) can legitimately be extended to cover those cases where an increase in aggregate production diminishes obstacles to investment on the side of finance. The rate of economic progress is limited, as Allyn Young pointed out, by the fact that "the accumulation of the necessary capital takes time".⁵⁵ Growth of per capita income, however, in itself

54. Cf. the yet more far-reaching list of "conditions which have a bearing upon production" and with respect to which advanced countries, merely because they are advanced, have an advantage over underdeveloped countries, in S. H. Frankel, *The Economic Impact on Under-Developed Societies* (Blackwell 1953), pp. 66 ff.

55. *Op. cit.*, p. 534.

facilitates the supply of capital, by making saving easier (at least at low levels of per capita income). Economic development may also stimulate the flow of saving by creating social attitudes conducive to thrift and by creating institutional channels for saving; and it may further increase the supply of investible funds by diminishing the inducement to hoard. It is arguable that investment in savings banks or other institutions of this sort in under-developed countries is likely to yield (interest-cost reducing) "external economies" in this peculiar sense.⁵⁶

(c) *The Structure of Demand*

In the two preceding sections, we investigated how an increase in the scale of output can give rise to economies through improvements in the "organization of industry" and changes in "supply of complementary factors". In this discussion, the initial increase in the scale of output was taken for granted, and we merely considered its consequences. Yet, it is obvious that an increase in the scale of output will, in fact, occur only if the larger output can be sold, in other words, in response to an increase in demand.⁵⁷ "The division of labour is limited by the extent of the market." It was Allyn Young's contribution to point out that this very fact provides a major part of the explanation of the phenomenon of increasing returns. Any increase in real income represents a widening of the market for goods and services in general which yields increasing returns in the form of further increases in productivity and real income, which further widens the market, and so on.

Allyn Young was primarily concerned to draw attention to the cumulative character of economic progress and therefore stressed increases in productivity gained through increasing returns as the source of the increase in real income and demand which opens up further opportunities for increasing returns. But *any* increase in real income, whatever its source, will clearly have the same effect of widening the market for goods and services in general. "It goes without saying that, with a given labour force and with given techniques and natural resources, it is only through the use of more capital [or, more generally, increases in productivity] that such an increase in production can be obtained."⁵⁸ But, as Young implicitly recognized, an increase in real income will widen the market and yield increasing returns whether it is due to population growth or new discoveries, as it were exogenous

56. The "role of finance" in economic growth is admirably analysed by Abramovitz, *op. cit.*, pp. 164-8.

57. If we like, we can express this fact, following Nurkse in the passage quoted above, by distinguishing between "physical" and "value" productivity.

58. Nurkse, *op. cit.*, p. 12.

to the system, or whether it is due to the endogenous operation of the cumulative process of "increasing returns and economic progress".⁵⁹

The point is of some importance when attention is focused on a widening of the market, not, as in Allyn Young's case, as a source of cost-reducing economies of scale, but as a source of new investment opportunities. For a widening of the market creates opportunities for new ("widening") investment, whether or not it also creates opportunities for cost-reducing ("deepening") investment based on economies of scale. It may be argued that such mutual support given by investment in one field to investment elsewhere through a mere widening of the market can hardly be treated as an instance of external economies, since the term "economies" properly connotes cost reduction. Rosenstein-Rodan, in the first statement of the argument, ingeniously forestalled this objection by reference to risk as an element of cost: "The industries producing the bulk of the wage goods can therefore be said to be complementary. The planned creation of such a complementary system reduces the risk of not being able to sell, and, since risk can be regarded as cost, it reduces costs. It is in this sense a special case of 'external economies'."⁶⁰ Since the phenomenon is important and clearly closely related to other undoubted instances of external economies, it may be reasonable to take advantage of this little piece of jugglery to justify the extension of the term "external economies" to include it.

Allyn Young stressed the effect of a widening of the market on cost-reducing economies of scale because, given a stationary population, absence of new discoveries, and full employment of available productive resources (which he took for granted), it is only through increases in productivity that real income can rise further and thus sustain the cumulative process of growth. In the context of economic development, however, the converse conclusion may be just as important: Where some of the available productive resources are unemployed (e.g. in the form of disguised rural unemployment), a widening of the market can increase real income even if it induces mere widening investment, without any economies of scale (though, in practice, real income will usually increase for both reasons).⁶¹ That "the inducement to invest is limited by the size of the market" is, after all, merely another statement of the relationship between the rate of investment and demand for final goods familiar in the theory of income determination

59. Allyn Young, *op. cit.*, p. 534.

60. *Op. cit.*, p. 206. Professor Scitovsky, in his illuminating recent article, also implicitly defines external economies in this wider sense since he is prepared to include any mechanisms by which expansion in one industry "give rise to profits" in another industry (*loc. cit.*, p. 149).

61. Cf. Nurkse's statement (*op. cit.*, p. 7) that "in a given line of production any increase in output, even when it maintains the old degree of capital intensity, will be discouraged by the smallness of the market".

in the form of the "induced" investment function. It is true that, given full employment of available resources, additional real investment requires an increase in "domestic purchasing power, not in monetary but in real terms. . . . Monetary expansion alone does not remove [the trouble], but produces merely an inflation of prices."⁶² But the reason is not that investment in any given industry is not stimulated by a rise in money demand for that industry's final products, but that, in the absence of unemployed resources, output can be increased in this industry only at the expense of a contraction of output elsewhere in the economy. In an under-employed economy, as the notion of "pump-priming" implied, monetary expansion alone may do the trick of expanding real output.⁶³

In parenthesis, a further point may be made which, while of little significance for problems of long-term economic development, further shows how Allyn Young's approach is related to Keynesian theory of income determination. Allyn Young's contribution was to show how, taking the economy as a whole, an increase in productivity generates further increases in productivity, via real income, because *supply creates its own demand*. Writing in 1928, Allyn Young was able to take his stand on Say's Law of Markets without any of the inhibitions which would naturally afflict an economist writing after 1936. We have learned to qualify Allyn Young's proposition: supply creates its own demand only if investment offsets saving. At the same time, without being conscious of this aspect, Allyn Young, with his insistence on the manifold ways in which increases in aggregate income give rise to new opportunities, not merely of widening investment, but also of deepening and especially innovatory investment—"new products", "new industries", "fresh applications of the fruits of scientific progress to industry"⁶⁴—stressed the very factors on which optimists about economic progress in a private enterprise economy must rely to lay the Keynesian spectre of stagnation.

So far we have taken into account only quantitative changes in the "structure of demand"—increases in demand for *given* products.

62. Nurkse, *op. cit.*, p. 6.

63. Cf. Nurkse's statement (*op. cit.*, p. 13): "While the money-income effect of investment accounts, at least in part, for the bunching of investment activities in the course of the cycle, it is the effect of the investment on the general level of productivity that increases the flow of consumable goods and services. The real-income effect, although it may have depressive monetary repercussions in the short run, is indeed the sum and substance of long-run economic progress." I.e. we must distinguish between three effects of investment: (a) the favourable (multiplier) "money-income" effect (which can increase real income only in an under-employed economy); (b) the depressive "real-income" effect, due to increase in capital equipment which competes with the existing stock; and (c) the favourable "real-income" effect which operates through increasing productivity and real income; the first two are short-run, the third long-run.

64. *Op. cit.*, pp. 528, 533.

What about qualitative changes, shifts in demand from old to new products? That these constitute an important source of new investment opportunities has often been emphasized, especially of course by Schumpeter, but as a source of new investment opportunities they are notoriously difficult to classify because they rouse the sleeping dogs of the index-number problem which are better let lie if the notion of an increase in "real income" is to be conveniently handled. Allyn Young dodged the issue by trying to assimilate new products to improvements in productivity: new products "have a presumptive claim to be regarded as embodying more economical uses of productive resources than those which they replace".⁶⁵ Part of the additional investment opportunities provided by the emergence of new products can be regarded as "widening" investment opportunities since, by stimulating new wants, it presumably raises the average propensity to consume. But the importance of new products as a source of new investment opportunities lies precisely in that they not merely add to total demand but cause shifts in demand which create demand for new productive capacity partly by destroying demand for existing productive capacity.

What matters for our purpose is that, though economic growth may yield external economies by stimulating the development of new products, the mechanism at work does not operate, in the first instance, through changes in real income and demand, but through changes in technology and is, therefore, related to the subject of the next, rather than this, part of the argument.⁶⁶

(d) *The "State of the Arts"*

We must inquire, finally, whether (and how) increasing returns can occur through changes in the fourth parameter, the "state of the arts", or technical knowledge.

D. H. Robertson, following Marshall, thought that, in constructing a long-period falling supply curve, "it would appear proper to eliminate the effect of major inventions which were clearly not dependent on the size of the industry".⁶⁷ This is, of course, correct if changes in technical knowledge must be regarded as entirely exogenous. This will usually be the case in the Marshallian context of growth of a single industry. It is a much more doubtful assumption in the context of economic growth of a whole economy.

Economic growth unquestionably stimulates technological progress in numerous ways: rising per capita income makes possible in-

65. *Ibid.*, pp. 535 f.

66. Investment in advertising and other selling costs provides an example of economies, through induced expansion and qualitative changes of demand, which may accrue externally as well as internally.

67. D. H. Robertson, "Those Empty Boxes", reprinted from *E.J.*, 1924, in *Readings in Price Theory*, p. 143, note (written in 1950); also Marshall, *op. cit.*, p. 460.

creased expenditure on education and research; the economic application of one invention, by posing new problems and stimulating the imagination of the production engineer, calls forth a series of further technological advances;⁶⁸ organized research increasingly produces discoveries to order, in response to new demands by consumers and business. "The Industrial Revolution of the eighteenth century has come to be generally regarded, not as a cataclysm brought about by certain inspired improvements in industrial technique, but as a series of changes related in an orderly way to prior changes in industrial organization and to the enlargement of markets."⁶⁹ Wherever an increase in the stock of capital (investment) and aggregate output induces technological changes which raise the marginal productivity of capital, and thus create new investment opportunities, we can speak of increasing returns due to changes in the "state of the arts".

What is the source (in terms of "input") of the additional output which is obtained by technological progress? On the face of it, the answer is simple. In any given state of technical knowledge, technical limitations prevent perfect adaptation of methods of production to the existing endowment of specific factors of production, the imperfection consisting, in the last analysis, of under-utilization of indivisible units.⁷⁰ Technological improvements "save labour", i.e. utilize labour more fully, by substituting "round-about" for direct methods of production, or they "save capital" by substituting smaller for larger indivisible units of capital equipment, or in other ways reducing "waste" of raw materials, fuel, or other complementary inputs.⁷¹

This would seem to be an entirely adequate answer with reference to technological changes in the narrow sense of improvements in methods of production, particularly where these improvements result from costless "discovery". But a case can be made for subsuming technological changes under our earlier heading of "changes in complementary factors". For one thing, there is a sense in which the

68. Cf. Keirstead's concept of "linked advances" in B. S. Keirstead, *Theory of Economic Change* (Toronto 1948), Ch. 8.

69. Allyn Young, *op. cit.*, p. 536. Allyn Young, like Marshall before him, wrote as though all "new discoveries" were exogenous, while endogenous changes in technique could be written off as "merely adaptations of known ways of doing things, made practicable and economical by an enlarged scale of operations" (*op. cit.*, p. 534, n. 2); this is a very questionable generalization.

70. It is not surprising that the economies of technological progress turn out to be due, at bottom, to the same cause as those of "improvements in the organisation of industry", for the difference between these two forms of change in method of production, which seems so marked in traditional partial equilibrium analysis, is, after all, nothing more clear-cut than the difference between those variations in the combination of different amounts and types of specific factors which are assumed to lie within the intellectual horizon of the entrepreneur and those which are assumed to lie beyond it.

71. The economies due to technological progress must, of course, be reckoned net of (internal or external) diseconomies of obsolescence.

“state of the arts” of a country at a particular time can be regarded as one aspect of its factor endowment; certainly, there seems little reason for drawing a sharp line between an increase in the “skill” of a country’s working population, on the one hand, and an increase in the general level of technical or scientific knowledge, on the other. The temptation to treat “technical knowledge” as a specific factor is increased when, as is increasingly the case to-day, technological advances represent the yield of investment in scientific or industrial research, in just the same way as an increase in the skill of workers may be the object of investment in training or a piece of machinery the outcome of investment in fixed capital.

Similar difficulties notoriously beset the analysis of other types of “innovation”. Does the discovery of hitherto unknown mineral resources represent an increase in a country’s factor endowment? The fact that discovery may often presuppose investment in the costs of exploration makes it seem convenient to treat costless discovery as an extreme case where the investment required to bring the additional capital resources into being is zero.⁷² The problem of “new products” discussed above is another example.

For our purposes, it does not matter very much how we choose to classify technological changes. What matters is that changes in the “state of the arts” constitute one of the mechanisms which may, and undoubtedly do, give rise to increasing returns. One reason why investment may increase rather than depress the marginal productivity of capital is that it may, as one of its repercussions, induce technological advances.

(e) *Summary*

To sum up the discussion so far, we have seen that orthodox theory, according to which the marginal productivity of capital must decline as the stock of capital increases, holds good only on the assumptions that (a) the structure of final demand, (b) supplies of complementary factors, (c) the state of the arts, and (d) the organization of industry, remain constant. We have also seen that the occurrence of increasing returns can be accounted for by the fact that none of these assumptions is necessarily valid: an increase in the stock of capital very often gives rise to incidental changes in one or more of these four parameters, changes which counteract and frequently outweigh the tendency to-

72. This would seem to be a more convenient approach than that of the Austrian school: “One of the chief functions of the accumulation of capital is to create possibilities of economic use for natural resources for which so far there had been none, and thus to convert objects without economic value into economic resources” (Lachmann, *op. cit.*, p. 709, and references there to Menger and Hayek).

wards diminishing returns.⁷³ Without having considered all the multifarious ways in which increasing returns may arise, we have shown that all the most important mechanisms operate through changes in one or the other of these parameters; and indeed that this is necessarily true of all possible causes of increasing returns. Finally, we have seen that it is possible to trace the additional output, which accrues as "returns increase", to additional "inputs": the additional "input" being either (a) fuller utilization of existing (indivisible or unemployed) complementary factors or (b) additional supplies of complementary factors. This, too, is a satisfactory conclusion; for what other source of additional "inputs" could there be?

3. *Analytical: External Economies*

In the second part of this article, we have tried to account for the occurrence of increasing returns. It remains to investigate why increasing returns in many cases accrue as external, rather than internal, economies; or, in other words, why, in the Marshallian case, an increase in the output of an industry, say through the establishment of new firms, may reduce costs to *other* firms in the industry (as well as to the new firms themselves); or, in the wider sense of increasing returns, why investment in one field may increase the marginal productivity of capital (create new investment opportunities) in other fields.

If we regard all the benefits that result from the initial increase in output, including both the profits directly accruing to the investor and the benefits accruing indirectly to other firms, as the total yield of the investment, the answer can be stated simply: external economies

73. These incidental changes in the parameters need, of course, not necessarily be favourable. So long as attention is concentrated on the economy as a whole, and factor supplies are assumed to be elastic, it is hard to imagine cases of additional investment having adverse repercussions (though the above-mentioned diseconomies of obsolescence partially off-setting economies of technological change may be an instance). It is another matter when factor supplies are assumed to be limited. In that case, additional investment in one field, by raising factor prices, will have adverse effects (external diseconomies) on investment in other fields, and these could conceivably outweigh favourable repercussions of the kind discussed above. This is the main objection to the doctrine of balanced growth raised by Fleming (*loc. cit.*). But since (a) a highly elastic labour supply is the central feature of the situation in most under-developed countries (cf. W. A. Lewis's brilliant article "Economic Development with Unlimited Supplies of Labour", *Manchester School*, May 1954) and since (b) the assumption of an elastic capital supply has been implicit in the context in which the doctrine of balanced growth has been put forward (i.e. to inquire why capital, assumed to be seeking investment outlets, does not go to under-developed countries, and how capital assumed to be available should be invested in such countries), the objection does not seem to be one which need cause the proponents of the doctrine very serious concern. (In Allyn Young's context of long-run cumulative growth in developed economies, it is, of course, not possible to assume a highly elastic labour supply in the short-run; but here account must clearly be taken of natural growth in the working population.)

are due to the fact that the investor is, for one reason or another, unable to appropriate to himself the whole of the yield of the investment. The question then becomes one of ascertaining the factors which prevent the investor from reaping the total yield of his investment. Let us consider the various types of increasing returns from this point of view.

(a) *Marshallian External Economies*

If expansion of output enables a large vertically integrated shoe manufacturing concern to install a new type of machinery which it produces in its own machine shop solely for its own use, the resultant economies of scale accrue entirely as internal economies. Contrast with this the case where growth of an atomistic shoe industry, by entry of new firms, creates external economies to all firms in the industry by making it profitable for a specialist firm to produce specialized machinery. To sharpen the picture, we may assume that it is the enlargement of the market for machines by the entry of one marginal firm into the shoe industry which tips the scales in favour of the establishment of the machine-making firm. In that case, the external economies accruing to the whole shoe industry might be said to be part of the total yield of the investment in the establishment of the marginal shoe-producing firm. This part of the total yield could conceivably be appropriated if the investor in the shoe-producing firm were able to exact adequate payment from the machine-producing firm as a condition of establishing his firm, and if the machine-producing firm, in turn, were able to compensate itself by charging a price for its machines which would deprive the other firms in the shoe industry of any of the benefits (external economies) accruing from the superior efficiency of mechanized production. What prevents either firm appropriating the benefits of external economies, in the Marshallian analysis, is the assumption of perfect competition. The machine-producer cannot appropriate the benefits if competition forces him to pass the gains on to his customers in the form of competitive prices; and, without discrimination, the old firms must benefit equally with the marginal new firm.

The force which prevents the appropriation of the economies of scale by one firm need not be competition. In the case where an increase in farm output yields external economies by spreading the overheads of an existing railway system over a larger volume of transport services, it is more likely to be public regulation of freight rates than competition which will ensure that the external economies accrue to the farmers, rather than to the railway company. But in all such cases, some of the economies will accrue externally wherever competition or public control prevents the initial investor from monopolistically appropriating the total yield of his investment.

(b) *Allyn Young's External Economies*

Quite a different explanation accounts for the external character of the economies which accrue when an increase in output anywhere in the economy widens the market for goods and services in general and thus creates new investment opportunities elsewhere. The explanation, however, is obvious and need not detain us long.

The reason why the benefits of increasing returns from an enlargement of the market do not usually accrue to a significant extent to the initial investor responsible for the increase in productivity and real income which caused the enlargement of the market is, fundamentally, as Nurkse has pointed out, "the diversity of human wants".⁷⁴ Recipients of an increase in real income will spend the extra income on a great variety of goods and services. That is why Say's Law is never valid for an individual industry but is valid ("hoarding" apart) for the economy as a whole.

The distribution of the benefits of this type of external economies depends, in the main, on the income elasticities of demand for different products: "The rate at which any one industry grows is conditioned by the rate at which other industries grow, but since the elasticities of demand and supply will differ for different products, some industries will grow faster than others."⁷⁵ So long, therefore, as the growth of output is dependent on investment in individual firms and industries, the economies accruing through enlargement of the market are, in their nature, mostly external.

(c) *Other Cases of "Irrecoverable Costs"*

There are, finally, a number of cases where, for a variety of reasons inherent in the nature of the product, "the benefits yielded by investment are difficult to appropriate and sell privately".⁷⁶

One example is education, where consumers are, at best, prepared to pay no more than the equivalent of the benefits they expect to accrue to themselves (or their children) but not for those benefits which accrue to society as a whole. Other examples are those services "in which universal or nearly universal use is required if benefit is to be obtained (e.g. many public health facilities and controls)" or in which the minimum scale for efficiency is such that they can only be provided for communal consumption, such as defence, foreign affairs, administration of justice, etc.⁷⁷ Yet another, rather different, example is investment in training labour which is "not profitable for a private entrepreneur" because "there are no mortgages on workers—an entre-

74. *Op. cit.*, p. 4.

75. Allyn Young, *op. cit.*, p. 534. Allyn Young, in analysing this process, employed the rather awkward concept of "elasticity of reciprocal demand" for commodity *a* in terms of commodity *b*, instead of the concept of income elasticity of demand.

76. Abramovitz, *op. cit.*, p. 141.

77. *Ibid.*

preneur who invests in training workers may lose capital if these workers contract with another firm".⁷⁸

These examples (except the last) constitute the traditional functions of government. They have for long been recognized as responsibilities of government because they cannot be left to private enterprise: they represent instances of Pigovian divergence between private and social marginal net product. Private and social marginal net products diverge in these cases precisely because the benefits of expenditure (investment) in these fields cannot easily be privately appropriated, because it yields "external economies".

One of the main theoretical contributions of recent writers on the problems of under-developed areas, and the reason for their revival of interest in the concept of external economies, has been their argument that the long-standing case for communal action in fields where external economies give rise to divergence between private and social marginal net product has a much wider application than the traditional functions of government. The argument is being applied to two new fields: One is the exploitation of Allyn Young's type of external economies in the form of "balanced growth" through "a wave of capital investments in a number of different industries":⁷⁹ "Complementarity of different industries provides the most important set of arguments in favour of a large-scale planned industrialization."⁸⁰ The other is government initiative in the provision of basic services (transport, power, irrigation, etc.) and social overhead capital (education, public health, etc.), the benefits of which accrue largely as external economies and which, therefore, do not sufficiently attract private investors. In all these cases, public investment has one great advantage over private, in that what are "external economies" to the individual private investor are "internal economies" for society as a whole.⁸¹ This is not necessarily a conclusive argument for government action in all such cases, for government operation may involve "diseconomies" of its own; but it constitutes a strong *prima facie* case.

Since so many of the obstacles to private exploitation of "potential" investment opportunities in under-developed countries can be accounted for in terms of divergence between private and social marginal net product, due to external economies, it is worth pointing out that not *all* such obstacles are of that character.

One of the factors which has frequently been mentioned as a deterrent to private investment in under-developed areas is that "additions to capital equipment in any case are apt to come in relatively big units, and there is especially a characteristic lumpiness in the process of investment in overhead capital facilities such as rail-

78. Rosenstein-Rodan, *op. cit.*, p. 205.

80. Rosenstein-Rodan, *op. cit.*, p. 205.

79. Nurkse, *op. cit.*, p. 13.

81. *Ibid.*, p. 207.

ways, power plants and water works".⁸² The trouble is that investment in these overhead facilities "is not only fruitless in the sense that it is merely a precondition, albeit an essential one, of useful production: it also implies activities of a peculiarly high capital-intensity. . . . Continuous development in small doses is apt to be very disappointing. What is needed is a big initial effort to carry through the barren period."⁸³

The difficulties to which these passages draw attention are clearly quite distinct from (though they are often associated with) those discussed so far, the need for a sufficiently large market and the fact that some of the yield of investment accrues "externally". The difficulties here are the large initial capital resources required and the length of the gestation period, and consequent high risk rate, in these fields of investment. These difficulties will not deter the very large private investor who commands adequate capital resources and can afford to take risks and a long view. Nor are they entirely non-existent for governments as public investors, though government usually has the relevant advantages of the very large investor in a high degree. They are not, therefore, obstacles to private investment which can be regarded as due to divergence between private and social marginal net product. Nor do they represent an example of difficulties due to external economies: the crucial dimension here is not space—the yield of investment in one field partially accruing in other fields—but time.⁸⁴

4. Conclusion

In this article, an attempt has been made to show how the meaning of "external economies" has changed, with a changing focus of interest, as the concept has passed from Marshall, through the hands of Allyn Young, to the current discussion of economic development; and to show how the various meanings are related. The classification of external economies, and of the factors which give rise to them, has been undertaken primarily with the object of helping to clarify some of the ideas which have assumed prominence in current consideration of problems of under-developed areas. But it may also have some relevance to the study of economic growth in advanced countries.

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82. Nurkse, *op. cit.*, p. 10.

83. Singer, "Economic Progress in Underdeveloped Countries", *loc. cit.*, p. 6.

84. A similar problem is represented by the peculiar uncertainties of development investment which arise from the fact that it aims at structural change: "In terms of the familiar diagram, economic development does not move along existing demand and supply curves, but moves the whole complex of these curves on to a different level. . . . Investment of this type is not a response to the existing market structure, but an attempt to alter that structure" (Gutman, *op. cit.*, p. 5); cf. also K. E. Boulding's reference to the problem of "maximum maximorum" in B. F. Haley (ed.), *Survey of Contemporary Economics*, Vol. 2, p. 27.

THE DEFINITION OF ECONOMICS*

“Economics,” says Professor Lionel Robbins, “is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses.”¹ In this neat formula he sums up a view of the scope of economics which was first advanced by Menger, and in England by Wicksteed. Its popularity in the English-speaking world is a relatively recent development and must be largely due to Professor Robbins’s persuasive pleading.

Before asking whether his definition is adequate, it is worth reminding ourselves of the standards by which any definition must ultimately be judged. To define a science is to define the special interests of the people concerned with it. If economics is defined in a way that excludes material with which economists are specially concerned, this is a *prima facie* reason for changing the definition. The same applies if a science is defined in a way which includes material with which its practitioners are not specially concerned. There may also be circumstances where a definition, though neither too wide nor too narrow, is none the less misleading.

Whether the definition involves error or merely threatens to cause confusion, there are two ways in which the resultant problem can be dealt with. We can say: “The fact that this material is (or seems to be) wrongly included in (or excluded from) the definition makes it an exception.” Or we can say: “The definition needs to be changed,” and we can change it accordingly. Which course we decide to take is finally a matter of convenience.

There is no doubt that on minor points Robbins’s definition has stood up to criticism well. It is open to the objection, however, that economics as he defines it overlaps the field of other sciences, a point which is important in view of recent suggestions that the method of economics be applied to them. Secondly, though supporters have thought it one of the virtues of the definition that it separates economics from technology, it will be argued below that it fails to do so. The definition can also be criticized on the ground that it is impossible to give a good companion definition of the word “economic”. It will therefore be suggested that Robbins’s definition of economics should be revised and that the word “economic” should be redefined correspondingly.

* I am indebted to Professor Wilfred Prest and Dr. A. C. Jackson for criticizing a draft of this article.

1. Robbins, *The Nature and Significance of Economic Science* (Macmillan, London, 2nd ed., 1935), p. 16.

1. *Some Criticisms of Robbins's Definition*

There is no need to summarize here the clear exposition which Robbins has given of his view of the scope of economics.² The main point to bear in mind is that the "alternative uses" which his definition mentions included, not only the achievement of different purposes by different people, but also the achievement of identical purposes by different people and of different purposes by the same person. If someone can consume a good at either of two times, and it seems important to him whether he does so at one time rather than another, then he must choose between alternative uses in Robbins's sense. Sometimes the ends with which economics is concerned are the acquisition of various consumer goods, and the scarce means is money. Sometimes the ends are, or include, the acquisition of wealth by separate individuals, and the scarce means are the resources with which they earn wealth. Lastly, the ends may be the manufacture of goods, and the scarce means the factors of production which are used for that purpose. It can readily be conceded that every relationship with which economics is concerned is between ends and scarce means which have alternative uses and, chiefly for this reason, Robbins's definition survives after over twenty years of sometimes heated discussion.

Some of the criticism which have been brought against it seem either trivial or mistaken. One was perhaps suggested by an admission on Robbins's part that he hesitates to use the word "wealth" "as equivalent to a flow of economic goods". To define "wealth" consistently with his definition of economics, he would have to say that it comprised all resources that satisfy human wants—which is not the sense in which we ordinarily use the term—or alternatively, that wealth consists of all resources that are scarce and have alternative uses. It is presumably because of this that he feels the use of the word "wealth" would involve a paradox whereby, if goods become free goods, wealth diminishes.³

There are, however, two reasons why this situation should not tell heavily against Robbins's definition. As Professor Fraser points out, we can define wealth "as including all *potentially* exchangeable goods, irrespective of whether they have or have not a value in any given case".⁴ A good may temporarily cease to be scarce relative to wants, but we need not regard it as ceasing to be wealth so long as there is any chance of it becoming scarce relative to wants on some future occasion. We may throw it away because its carrying costs outweigh the benefits, apparently rather hypothetical, from holding on to it; but if so, we are making a deliberate decision to sacrifice wealth in one form in order to conserve it in other forms. Consequently, when

2. *Ibid.*, pp. 12-21.

3. *Ibid.*, 47 n.

4. L. M. Fraser, *Economic Thought and Language* (Macmillan, London, 1937), 24 n.

a good passes from the scarce category to the free category, it does not thereby cease to be wealth. This only happens when we choose to say that it is no longer *potentially* exchangeable. The amount of wealth depends on what we regard as wealth, and it is misleading to say that wealth "diminishes" when we decide that some item no longer falls in the "wealth" category.

Secondly, it is rare for any good to become a free good unless resources which are scarce, relative to wants, are being used to produce it. It would be quite consistent with ordinary usage to think of wealth as consisting not only of scarce means with alternative uses, but also of goods which, though not scarce, have been produced with scarce means. On this view, there are few goods of which we cannot say definitely that they are either wealth or free.

It has been said that Robbins's definition "precludes any consideration of the general level of economic activity".⁵ The implication is that in a depression resources are not scarce. In the relevant sense, however, they are. They may be abundant relative to effective demand, but they are not abundant relative to desire. The reason why, in a depression, all factors of production are not fully employed is that the prices asked for their services are too high to be worth paying. This is quite consistent with the possibility that still higher prices would increase confidence and purchasing power to a point where the demand for factor services actually rose. That would merely mean that over a certain range, the income effects of the increase in demand were more important than the substitution effects. If labour were not scarce relative to demand and were expected never to be scarce again, wages would be nil and no one would be afraid of their dropping any lower. Employment of labour would go on increasing so long as the marginal product of labour was positive—which means that all labour would soon be employed.

A more substantial criticism can be levelled at Robbins's definition, namely, that it fails to separate economics from technology.

According to Hans Mayer, whom Robbins quotes, a problem of technique exists where there is one end and more than one means of achieving it. A problem of economy exists when there is more than one end as well as more than one means.⁶ It can be admitted that this distinction is perfectly sound in logic. What we have reason to question is whether it separates the sphere of technology from that of economics.

It has been argued that it does so in the following way: if we want to build the fastest car, regardless of cost, a problem arises which is purely technical. But if cars are being made for profit, other considera-

5. Raymond T. Bye, "The Scope and Definition of Economics", *Journal of Political Economy*, October 1939, p. 645. "Such problems cannot be fitted into Robbins's definition without a good deal of literary gymnastics" (p. 646).

6. Robbins, *op. cit.*, pp. 32-8.

tions enter. The problem then is to decide how many cars and what types of car should be made, having regard to what they will sell for, and how this should be done, having regard to the cost. The problem as a whole can only be solved by solving a number of technical problems and also an economic one.

The technical problems arise from the fact that there are various possible methods of producing any particular quantity of any one type of car. Some of these methods will be inferior to others in the sense that they use a greater quantity of some scarce resource, without making a smaller use of any other resource and without leading to higher output. Such methods of production can be ruled out on technical grounds. We then have a list of possible arrangements, all technically unimpeachable, and must choose between them. How we choose should depend on the relative values that we place on marginal cars of each type and on marginal units of each type of resource. Ordinarily this will depend to a large extent on market prices.

If the distinction between technique and economy always arose in this form, it would neatly separate the sphere of economics from that of technology. In fact, however, we have merely described one of the forms which problems of economy can take. For building the fastest car is an end that we can pursue only if we set ourselves a number of ends which are, in turn, means to the end of building the fastest car. These ends, like minimizing air resistance, maximizing horsepower, etc., will sometimes conflict; and in deciding which materials to use and how the car should be constructed, we must often strike a balance between them.

It may be held that this point is irrelevant since the conflict between ends is not due to a scarcity of means. Yet the means in this case are every bit as scarce as in any situation dealt with in economics. The fact that there can be only one building on the south-east corner of an intersection means that such buildings are scarce, and there is no actual or apparent borderline between this sort of scarcity and the sort more obviously due to the niggardliness of nature. Even if there were, economics is undoubtedly concerned with the effects of both types of scarcity. It has been interested right from the start in problems arising from the shortage of centrally located land as well as of land which is highly fertile. If it is conceded, however, that the physical impossibility of erecting two buildings on the same site creates scarcity in the realm of economics, it must be conceded that similar impossibilities create scarcity in the realm of technology. For purely technical reasons, the designing of an axle for a certain purpose may call for economy. The larger its diameter, the greater the force it can transmit; hence the aims of reducing its size and of transmitting as large a force as possible are in conflict. They would still be in conflict, and the conflict could still be technically relevant, even if axles were free goods.

Inevitably technology contains problems of economy, and Robbins's definition would include them in economics, even though the science can throw no light on them. Admittedly all problems of economics are problems of economy, but not all problems of economy are illuminated by economics.

The distinction between the concepts of technique and economy as defined by Mayer is perfectly valid, but it cannot be used to separate the science of economics from the science of technology, pushing some relationships into the first field and others into the second. Ultimately this is due to the very meaning of the concepts of end and means. We can think of a situation or course of action as a means whether or not it is *used* as a means, and whether or not, if it were used, it would achieve its end. If, however, it can be thought of as a means, it can be thought of equally well as an end. For to use a means is to aim at something, i.e. at using the means. This, therefore, becomes an end. If one of my ends is to write and I pick up a pencil in order to do so, I entertain a further and subordinate end—namely, to pick up the pencil. As Dr. Zweig says, in regard to another attempt to separate economics from technology:

“the end in one case may constitute the means to some further end, and both ends and means are just different links in one and the same chain. Coal is the means in the production of iron, which in this connection is the end, but iron again is only the means in the production of agricultural machines, which are again the means in some other association”.⁷

To say this is not to say that there is no difference between ends and means. A situation can be regarded as an end without being regarded as a means to other ends: ends, that is to say, can be ultimate.⁸ In thought, moreover, the means-aspect of a situation or course of action can always be separated from the end-aspect. We are perfectly capable of thinking of something as a means without thinking of it as an end also. But anything that is thought of as a means *can* also be thought of as an end—if it could not be, then the “use” of the means could not be aimed at. As we have seen, the strength of Robbins's definition lies in the fact that the earning of wealth and various steps towards doing so, as well as the final aims of consumers, can all be regarded as ends. This fact is fatal to the attempt to separate economics and technology on the basis of Robbins's definition.

These two fields are, as a rule, easily distinguished because, in practice, we only use the term “technology” to describe sciences con-

7. Ferdynand Zweig, *Economics and Technology* (P. S. King & Son, London, 1936), p. 22. His criticism of Robbins's definition may rest, however, on a misconception. Cf. also J. N. Tewari, “What is Economics?”, *Indian Journal of Economics*, April 1947, p. 424.

8. An ultimate end may also be instrumental. One can regard happiness as an end in itself and also recognize that the happier workers are, the more efficient they are likely to be.

cerned with physical relationships. There are, however, social sciences that bear on economic affairs in the same way that technology does, and whether we call them technology or not, the problem of separating them from economics is a real one. Administrative science and the discipline which has come to be known as "industrial relations"⁹ are important sciences of this kind. Both are concerned with the allocation of scarce means between competing uses.

2. *Economics and its Neighbours*

This brings us to the central weakness of Robbins's definition. He regards economics as concerned with a relationship between all types of ends and all types of scarce means that have alternative uses. But he does not specify *which* relationship. Indeed his definition is often paraphrased to read that economists study *the* relation between ends and scarce transferable means. There are, however, many such relations, and economics is more concerned with some of them than with others.

It is a pity that the many writers who quote Robbins's definition do not quote also the sentences in front of it.

"The economist studies the disposal of scarce means. He is interested in the way different degrees of scarcity of different goods give rise to different ratios of valuation between them, and he is interested in the way in which changes in conditions of scarcity, whether coming from changes in ends or changes in means—from the demand side or the supply side—affect these ratios."¹⁰

This is a valuable description of what economists do, but even in conjunction with the definition that follows, it hardly marks out a distinct science. For even within the field where "ratios of valuation" have been formulated, economics is not equally concerned with all the forces by which the ratios are affected. It is certainly interested in the effect that tastes, fiscal policy and the distribution of wealth may have on the demand for consumer goods. Equally certainly, it is interested in the effect of technique, fiscal policy and the demand for consumer goods on the demand for factors of production. It is interested also in the

9. In a valuable paper, "The Theory of Effort and Welfare Economics", *Economica*, February 1951, Dr. A. E. C. Hare points out that "industrial relations in its present stage of development as a separate specialisation consists of an assembly of very diverse data related in various ways to labour and its problems" (p. 81). He outlines a theory of effort which, he suggests, "appears to be capable of relating the empirical observations of industrial psychology to the practices of personnel management and joint consultation in such a way that they all fall into place as part of the general theory of welfare economics. If this is so, it may perhaps be a starting point for a very desirable and much wider unification of the present diverse body of matter which constitutes industrial relations" (p. 82). There is no suggestion that the subject should be incorporated in economics, or that it ought to use similar methods.

10. Robbins, *op. cit.*, p. 16.

effect of the demand for factors of production and of fiscal policy on the distribution of wealth. But these relationships apart, the boundary between economics and the field we are pleased to describe as economic sociology¹¹ is indefinite.

The effect of a change in the distribution of wealth on the size and composition of the population would probably be included in economic sociology by all who distinguish it from economics proper. But the same might not be said of the effects of the population change on labour supply and consumer demand. The effect on tastes of advertising and of the distribution of wealth are usually turned over to economic sociology, and so, until very recently, was the way that the demand for consumer goods and for factors of production affects technical invention. The effect on tastes of the concentration of labour in cities is certainly regarded as outside economics. As for how urbanization reacts on politics and leads to the growth of trades unions, both of which developments affect the distribution of wealth and the supply of labour—the whole of that involved story has been told many times, and has never been the exclusive concern of either economics or economic sociology.

Each of these relationships can be regarded as arising between ends and scarce means which have alternative uses. Yet economics is not concerned with all of them. Those with which it *is* concerned have the common characteristic that they almost always involve exchange and the use of money.¹² Hence the question has been raised whether, in defining economics, this limitation should be recognized.

Robbins considers that this “is not a matter about which sensible people will waste many precious moments”.¹³ Whether he is right would seem to depend on whether the method of economics is different from that of the other social sciences. This is a question that can hardly be settled in passing. It must suffice to say that many economists feel that there is a difference, and that the difference lies in the presence in economics of a structure of necessary argument which is used to suggest hypotheses. No such structure exists in the other social sciences and to that extent, the method of economics is unique. It is therefore desirable that its professed scope should correspond to the area within which the method is used.

11. For reasons of space no attempt to define economic sociology will be made here. To try and do so would at once raise the question of the scope of sociology generally.

12. Cf. Benjamin Higgins, *What Do Economists Know?* (Melbourne University Press, 1951), pp. 3-4, 3 n.

13. “Live and Dead Issues in the Methodology of Economics”, *Economica*, August 1938, p. 344. More recently he has spoken appreciatively of “the Pigovian ‘accessibility to the measuring rod of money’, which, if not the same thing as the definition in terms of scarcity which I favour, differs from it only in a certain implied institutional restriction”. “Robertson on Utility and Scope”, *Economica*, May 1953, pp. 104-5.

In practice it has been allotted a broader area than this, and two unfortunate results have followed. First, those parts of the wrongly annexed territory that are not occupied *de facto* by any other science have been somewhat neglected. Since they cannot be studied by the method of economics, they tend to be ignored by professional economists, while other social scientists are largely unaware that problems await study for which their own methods are better suited. The neglect of many problems in economic sociology has been partly due to this cause.

Secondly, territory has been claimed for economics which other sciences have long been occupying. For virtually every social science is concerned in part with the relation between ends and scarce means that have alternative uses. This is true, e.g., of political science. A diplomat has only a limited amount of bargaining power relative to his ends. He can seldom achieve all the aims of his policy. Up to a point these aims may be complementary. But beyond that point they almost always conflict. The more bargaining power the diplomat expends on one aim, the less, as a rule, he will have to spare for achieving others. Likewise, administrative science, being interested in how administrators spend their time, is concerned with the relation between scarce means and their alternative uses. Chiefly for this reason, it has been suggested that political science and administrative science should be drastically reorganized with economics as a model.

We have the high authority of Professor Talcott Parsons for the view that the method of economics is applicable elsewhere.¹⁴ Yet the history of efforts to apply it to other sciences is not encouraging. Proposals for reconstituting political science on these lines have been current for quite a while. When economics was thought to be concerned with the effects of the pursuit of a rather narrow range of purposes, it was suggested that political science should trace in the same way the implications of the desire for power.¹⁵ Now, under the influence of Robbins's definition, it is argued that the theoretical parts of economics and of political science belong to a larger theory of political and economic choices.¹⁶ Several writers have also proposed that eco-

14. ". . . economic theory is clearly formally and technically the most highly developed of the theoretical sciences of human action. With the appropriate adaptations, which in many cases may prove to be far less radical than appears at first sight, its methods of analysis and even its substantial results can certainly serve as models for other branches of the general theory of social systems. The view of the relation of economics to these other branches which I have put forward in these lectures greatly enhances my own estimation of the promise in this direction." Parsons, *The Interpretation of Economic and Sociological Theory*, The Marshall Lectures, University of Cambridge (1953, mimeographed), p. 67.

15. G. E. G. Catlin, *The Science and Method of Politics* (Kegan Paul, London, 1927), *A Study of the Principles of Politics* (Allen & Unwin, London, 1930).

16. D. Black, "The Unity of Political and Economic Science", *Economic Journal*, September 1950.

nomics should incorporate administrative science, at least so far as the latter deals with business.¹⁷

It usually seems to be implied that the sciences concerned should copy the method of economics, a proposal the value of which would be shown most clearly if the method were used to solve their problems. It is not always possible, however, for the value of methodological ideas to be demonstrated in this way. The first job is to lay foundations, and even where something has been built on them, as for instance by Professor Black,¹⁸ the fact that his contributions to political and administrative theory do not appear to have any immediate value is certainly not sufficient proof that the lines he is working on are mistaken.

It is rather a thankless task to take up a negative attitude towards the proposals which he and other writers have put forward. Yet the progress which economics has made while using its distinctive method seems wholly due to the role of price, so that its method is unlikely to be of much use outside the field where price is employed. In other departments of life people may act quite as rationally as they do in the market-place. Their conduct may be guided mainly by a single aim, just as economic conduct is guided mainly by the desire for wealth. But nowhere else is there any device fulfilling a range of functions at all comparable to those of price. Its success in summarizing information and so enabling it to be communicated between mind and mind is quite unique as regards data that are not merely physical. Moreover, once the information is communicated, it co-ordinates economic behaviour in a way which has no parallel in other spheres. Elsewhere there may be data, like voting returns, which are just as precise as prices. But they do not exert a comparable influence on the way in which people act.

It is true, as Professor Black reminds us, that votes indicate preferences just as market transactions do. It is therefore possible to state coefficients which, like price, relate the extent to which some prefer-

17. "... the theory of business administration cannot be kept separate from the rest of economics. Separation would only be justified if a special group of problems existed. The independence of its problems is the only basis for the independence of a science. . . . Because of the size of the problem it is right and understandable that the student of business administration studies more the relations *within* the firms and households, and the economist more the relations *between* economic units. But the difference in emphasis should not lead to a separation into two separate sciences." Walter Eucken, *The Foundations of Economics* (English trans., William Hodge, London, 1950), pp. 311-12.

"To students of business administration, it may seem . . . odd that, so far, little has been done to integrate into the body of pure economics any developed theory of the functioning of the administrative organisation." G. F. Thirlby, "Notes on the Maximisation Process in Company Administration", *Economica*, August 1950, p. 266.

18. His *Economic Journal* article mentions four earlier papers. D. Black and R. A. Newing, *Committee Decisions with Complementary Valuation* (William Hodge, London, 1951) was reviewed in this journal for May 1953.

ences are implemented to the extent to which other preferences must therefore be sacrificed. But their coefficients, unlike price, are of little use in advance of the event. Knowledge of them, if it were ever disseminated, would not have much influence on political conduct. It would tell the voter relatively little about the implications of his vote. In consequence it would not tell the political scientist much about the factors by which the voter was influenced. As for explaining the behaviour of politicians, the votes at previous elections are only some of the signals by which even the most cynical shapes his course.

The purposes of voting are essentially different from those of money. Money is not only a means of exchange and a store of value, it is also a standard of value and, in a complex economy, an indispensable basis for the kind of calculation from which economic decisions spring. The ballot box has more modest functions. It helps to create the conditions which allow government by consent—its other functions are essentially subsidiary. People can be governed in a tolerably competent manner though they do not possess the vote, but no large-scale economy can function with even moderate efficiency unless it uses a price system. These differences are sufficient to rule out the possibility of a political science employing the method of economics. For if even the vote fails to produce the kind of conditions that have allowed economics to use its distinctive method successfully, it is unlikely that other phenomena will prove more serviceable.

The view that administrative science—of which “industrial management” is, of course, a part—should be included in economics and should use similar methods deserves fuller consideration. In a distinguished work on the methodology of this discipline, Professor Herbert Simon expresses the belief “that concepts and theorems developed in economic theory have wide applicability to administrative decisions”.¹⁹ To say this is not to say that administrative science should use the method of economics, and in the present connection Simon’s views are only pertinent because he has given us what is, perhaps, the ablest treatment so far of the methodological problems of administrative science.²⁰

Simon argues that

“the criterion of efficiency as applied to administrative decisions is strictly analogous to the concept of maximization of utility in economic theory. It is not asserted here that the criterion of efficiency always does dominate administrators’ decisions, but rather that if they were rational it would.”²¹

19. Simon, *Administrative Behavior* (Macmillan, New York, 2nd ed., 1947), p. 182.

20. I have discussed some of the suggestions in Professor Simon’s book in a review in *Public Administration* (Australia), March 1950.

21. Simon, *op. cit.*, p. 182.

But the analogy is not a good one. For as Simon later observes :

“The need for an administrative theory resides in the fact that there *are* practical limits to human rationality, and that these limits are not static, but depend upon the organizational environment in which the individual's decision takes place. . . . Two persons, given the same possible alternatives, the same values, the same knowledge, can rationally reach only the same decision. Hence, administrative theory must be concerned with the limits of rationality, and the manner in which organization affects these limits for the person making a decision.’²²

A theory describing the various factors which affect the extent to which administrators act rationally would be welcomed by economists. Yet their task is essentially different from that of administrative scientists. The economist works out what people *would* do supposing they achieved their ends by the most rational means. He then proceeds to investigate whether they *do* act in this way. If the administrative scientist were to use a similar method, his first step would be to work out the course of action that would be rational for an administrator faced with a given problem and guided by given knowledge. But this would be easier talked about than done. Obviously the rational means for achieving a certain end cannot always be worked out easily before action is taken. It could be, then as long as the end was envisaged clearly enough the rational means would almost always be chosen. Nor need the situation be any different after the event. Even where a decision has been reached and acted upon, it may not be any clearer whether it was, in fact, the appropriate one. If the problems involved were complex, it is unlikely that an administrative scientist, arriving on the scene one year or even ten years later, will be able to see what the right decision was. Besides, if he is to relate the degree of efficiency achieved to its causes, he must decide how far the decision was subjectively rational. He must decide, that is to say, whether the administrator made the best possible decision, knowing what he did. This means discovering what the administrator knew ; and to discover what anyone knew on some previous occasion can be very difficult.

It may be objected that there is seldom a perfect coincidence between the assumptions of economists and the facts, but that even so, it has been found useful to calculate what the assumptions imply. It is only useful, however, because, as a rule, conduct in concrete situations is something like what it would be if the theorist's assumptions applied. No doubt the decisions of any administrator are *something like* what they would be if the administrator were infallible and knew a great deal that he does not know. But from the very nature of the administrative problem, the behaviour of administrators varies widely from this norm. The whole purpose of administrative science is to

22. *Ibid.*, pp. 240-1.

explain why it varies. In economics it is helpful to know the exact respects in which the facts of any particular case diverge from the assumptions of the "nearest" theorem, and the theorems can be useful even where the divergence is perfectly obvious. In similar cases administrative scientists may get some help by making assumptions like objective or subjective rationality and drawing deductions from them, yet it is most unlikely that they will get as much help as economists do.

Professor Simon gives an interesting analysis of the conditions of efficiency.²³ He says that

"the mathematically minded will see in this structure a set of equations—strictly identical with the economist's 'production functions'. . . . It follows from the considerations which have been advanced that that portion of the decision-making process which is factual, which is amenable to scientific treatment, resolves itself into the determination of the production functions of administrative activities".²⁴

Yet this, after all, is only a small part of the economist's task. If it were his main task, then the whole method of his science would be different.

It seems unlikely, therefore, that political science or administrative science will ever use the same method as economics. This strengthens the case for defining the latter field in a way that will make its boundaries clear.

3. *Robbins's Definition of "Economic"*

There is a final objection to Robbins's definition. That is the difficulty of reconciling it with the everyday meanings of the word "economic". To use this adjective after defining economics as Robbins does will sometimes cause serious confusion, as a teacher quickly discovers. The problem links up with another, which is what we mean by "goods and services". We certainly do not include under this head everything that is useful or desirable. By goods and services we mean the things that help to achieve our economic ends. Goods and services are, in effect, economic means. To get beyond this we must give a precise meaning to "economic".

In *The Nature and Significance of Economic Science*, Robbins feels obliged to suggest that the word "economic" be avoided altogether in describing ends or satisfactions.²⁵ Some years later, how-

23. *Ibid.*, pp. 186-8.

24. *Ibid.*, p. 188.

25. "It would be going too far to urge that it is impossible to conceive of 'economic satisfactions'. For, presumably, we *can* so describe a satisfaction which is contingent on the availability of scarce means as distinct from a satisfaction which depends entirely on subjective factors—*e.g.*, the satisfaction of having a summer holiday, as compared with the satisfaction of remembering it. But since, as we have seen, the scarcity of means is so wide as to influence in some degree almost all kinds of conduct, this does not seem a useful conception. And since it is manifestly out of harmony with the main implications of our definition, it is probably best avoided altogether." Robbins, *op. cit.*, p. 25.

ever, when writing *The Economic Causes of War*,²⁶ he found it essential to define economic ends in a way that would separate them from military and political ones. This was bound to be difficult; for we not only regard the obtaining of money or of consumer and producer goods and services as an economic end, we may also treat as economic an end that is only valued because in turn it assists the winning of wars. We regard cutting off an enemy's supplies as an economic objective.

Robbins has a definition which he believes corresponds to both the senses in which the word is used.

"If, in everyday speech, we say that a man's motive in doing a certain thing is wholly economic, what we really mean is simply that *he regards it only as a way of securing means for satisfying his ends in general*. If he does it with only one end in mind, we do not regard his motive as economic; we regard it as having the character of the end to which it is specific. But if he does it with the desire to increase his power to satisfy ends in general, then we do regard it as economic; and we say that his action has an economic cause.

"This way of speaking has its counterpart in the more technical regions of economic analysis. Rightly conceived, the economic man of classical theory is not a man who has no end but the making of money. He is not a man who is concerned only with providing for his own consumption. He is simply a man who *in his capacity as producer* is concerned with the maximization of general purchasing power. His productive activities are not ends in themselves. They are not immediately subservient to particular kinds of consumption. They are purely instrumental to the augmentation of his power to purchase in general. He may want money for purposes of pushpin or poetry, for egotistical or altruistic reasons. But *as producer* he has no mixed motives. His motive is purely economic."²⁷ "The characteristic of the economic motive is the lack of specificity of the means with which it is concerned."²⁸

It can be admitted that Robbins's definition corresponds perfectly to one of the distinctions between the economic and the non-economic.

"... the distinction within the sphere of general strategy between military and economic objectives will be seen to be a distinction between objectives having more or less specific utility for the ends of particular operations. The destruction of a cargo of iron ore is an economic objective; the destruction of steel guns is military."²⁹

But Robbins must also separate economic objectives, in the sense of money or goods and services, from military and political objectives. Here his distinction breaks down. In the first place, consumer goods and services may be desired only for their own sake, and even producers' goods and services can be highly specific. In the second place,

26. Jonathan Cape, London, 1939.

27. Robbins, *The Economic Causes of War*, pp. 117-18 (Robbins's italics).

28. *Ibid.*, pp. 118-19.

29. *Ibid.*, 119 n.

military and political objectives can also be desired for more reasons than one. A military end, once achieved, can be used as a means to a number of ends. Successful interference with an enemy's trade opens quite a variety of possibilities. No doubt these ends are also means to the single end of victory. But victory in turn can be used to promote a number of aims.

The inadequacy of Robbins's definition becomes clear when he tries to separate the economic causes of war from the non-economic.

"The causes of war are to be regarded as economic if the objective is purely instrumental to securing for some person or persons a greater command of resources in general—a greater power of choosing alternative types of real income. They are to be regarded as non-economic if the objective is not instrumental to anything further—if it is definitely an end in itself rather than means for a number of ends."

Immediately after, however, he says that "both types of war may be waged by men having a multiplicity of ultimate objectives".³⁰ If the word "economic" is to be used to describe all ends that are also means to other ends, it can be applied to any end at all, except those which are not instrumental to other ends and which are only pursued, therefore, if they are held to possess ultimate value.

Robbins's definition of a very useful adjective is scarcely satisfactory. Yet it is hard to see how it can be improved upon consistently with his definition of economics. If this, however, can be amended, we may be able to define "economic" in a way which fits in with the new definition of the science, as well as corresponding to general usage.

4. *Economics and "Economic" Redefined*

It has been suggested that economics describes those relationships between ends and scarce transferable means which involve exchange. The science, however, can be interested in such relationships even where there is no question of exchange. Recent discussion has shown that it throws enormous light on the allocation of producer goods and services in a fully socialized economy, provided the economy employs a price system.

Professor Parsons gives a strikingly accurate account of economic theory when he calls it

"a system composed of the variables which most directly account for the degree to which any given social system of action in fact involves a rational process of the acquisition and allocation of scarce resources by the means designated".³¹

But the definition in the sentence preceding this quotation is open to criticism:

30. *Ibid.*, p. 118.

31. Parsons, *The Structure of Social Action* (2nd ed., Free Press, Glencoe, Ill., 1949), p. 266.

“... for the purposes of this study, economics may be defined as the science which studies the processes of rational acquisition of scarce means to the actor's ends by production and economic exchange, and of their rational allocation as between alternative uses”³²

Economics can study choice even where this deviates somewhat from the rational norm. In any case the definition fails to exclude technology, though Parsons certainly wishes to do so.³³ Nor does it eliminate the many relationships which bear on acquisition and allocation but with which economics is not concerned.

The solution would seem to be to make some mention of price when defining our science. The meaning of price is only intelligible along with the notion of scarcity, yet the fact of pricing need not accompany scarcity and is, indeed, a distinguishing feature of those scarcity relationships in which economics is interested. The science should therefore be defined as follows:

Economics studies those relations between ends and scarce means with alternative uses that are usually mediated by price.

The main reason for amending Robbins's definition on these lines is that economics is thereby separated from neighbouring sciences. When an entrepreneur uses price in making his decisions, including decisions about productive methods, economics can throw some light on the process by which the decisions are reached. In other connections where scarce means must be allocated between alternative uses, and where the process is not assisted by price, economics contributes nothing. It throws no light on the purely physical problems of economy with which technology abounds, nor does it illuminate the distinctive problems of administrative science. By explicitly recognizing these limitations we obtain a watertight definition. If, of course, administrators or builders or engineers ever tackle their distinctive problems with the help of coefficients that perform the same functions as price, then economics will overlap with other disciplines. It has been suggested that linear programming could be used to set up a system of shadow prices which would guide the decisions of managers at the lower levels.³⁴ So far as this proposal is acted on, the borderlines of

32. *Ibid.*, p. 266. Professor Stigler has given a similar definition: “Economics is the study of the principles governing the allocation of scarce means among competing ends when the objective of the allocation is to maximize the attainment of the ends.” George J. Stigler, *The Theory of Price* (Macmillan, New York, 1947), p. 12.

As between the two, Professor Parsons's definition has the advantage that by mentioning “the process of rational acquisition . . . by production and economic exchange”, it includes relationships that help to determine the distribution of wealth and are traditionally included in the corpus of economics.

33. Parsons, *op. cit.*, pp. 265-6.

34. See A. Charnes, W. W. Cooper and A. Henderson, *An Introduction to Linear Programming* (Wiley, New York, 1953), pp. 33-4, 39 and the references given there.

both economics and economic sociology will need to be reviewed. This, however, is a problem with which we can deal if and as it arises.

The amended definition covers economies in which some good, valuable in itself, does service as money—in Mr. Radford's P.o.W. camp, it was cigarettes.³⁵ Such goods *are* money and the resultant evaluations are prices, in every important sense of the words.³⁶ Since the definition refers to relationships *usually* mediated by price, it covers economies where no such standard of reckoning is used. In such economies, however, there has been little or no exchange³⁷ nor much rational calculation, hence economics can tell us little concerning them. On the other hand, a points system of rationing being a price system in all but name, its problems clearly fall within economic science.

The proposed change in Robbins's definition is something of a concession to Professor Pigou. Pigou defines economic welfare as

“that part of social welfare that can be brought directly or indirectly into relation with the measuring-rod of money”,³⁸

and a definition of economics could be worked out on similar lines. It would be necessary, however, to delete the words “directly or indirectly”, since problems of technique can certainly be related to the measuring-rod of money. It might also be preferable to speak of that part of welfare “that can be *and usually is*” so related. However, the definition would still fail to specify the type of relation in which we were interested. By introducing the idea of economy, Robbins and the writers preceding him have rendered a service.

Lastly, the proposed amendment lets us define “economic” in a way consistent with our definition of economics and also with everyday speech. We can say that a problem is economic if it is usually solved with the help of price. An end is economic if its cost, in terms of alternative ends, is usually measured by price. It follows that ends can still be economic even though there are times when this method of measuring their cost is not employed. What is decisive in this regard is the way in which the cost of the end is *usually* measured. Whether it is a means to other ends and the nature of these other ends are wholly irrelevant. Likewise a means is economic if its contribution is usually measured by price.

There will be borderline cases where an end which is also a means cannot be easily classed as either economic or non-economic. Here the best procedure is to define the end more precisely. If we want to contrast military ends with economic ones, it would be risky to put “guns” in either category. But we can say that guns at the point where they

35. R. A. Radford, “The Economic Organisation of a P.o.W. Camp”, *Economica*, November 1945.

36. Cf. Eucken, *op. cit.*, pp. 159-60.

37. Norman Angell, *The Story of Money* (Cassell, London, 1930), Ch. 2.

38. A. C. Pigou, *The Economics of Welfare* (Macmillan, 4th ed., 1946), p. 11.

leave the arsenal are economic ends, usually pursued with the help of price, while guns on the battlefield, whether brought there as a matter of tactics or lately captured from the enemy, are not ends usually pursued with the help of price. They are therefore non-economic.

The definition proposed here can also be used to separate the economic aspects of rural life from the non-economic. The economic advantages of a rural job can be regarded as including not only the associated power to buy goods and services which are priced in both country and city, but also benefits which are free in the country and can only be made available in cities by using scarce resources. Day-time privacy, day-time quiet, opportunity for outdoor social contact and access to natural beauty are benefits of this kind. They should be taken account of along with wage and price data when rural and urban living standards are being compared. For this purpose, however, they must be distinguished from other rural advantages, real or alleged, like the cohesiveness of small communities. The fact of their being obtained usually with the help of price seems the only adequate criterion.

No doubt both the suggested definitions must still be used with judgment. This simply reflects the fact that the bearing of economics on concrete problems and the help which price gives in measuring the cost of achieving ends are always matters calling for judgment. Each can vary greatly, even between situations that in other respects are very similar.

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THE FUTURE OF INTER-INDUSTRY ANALYSIS

1. *An Empirical Analysis*

Keynes's *The General Theory* has furnished economists with probably the most powerful method of analysing the productive activity of the entire community. His formulation of that theory in aggregative terms was designed for the analysis of problems concerned with the economy at large, notably the problem of mass unemployment in the 'thirties. However the characteristic economic problems to-day are as much problems of *industrial structure* as of the economy at large—e.g. problems of inflationary bottlenecks, import surplus and defence planning. Indeed, the unemployment problem itself has basic structural aspects. It is natural therefore that an effort should be made to develop the Keynesian theory to permit analysis of the structure, as well as of the amount, of national employment and activity. It was pointed out in a previous article¹ that *inter-industry analysis* constitutes exactly such a development of Keynesian theory. The aim of this paper is to assess the degree of success with which inter-industry analysis can handle practical problems of industrial structure.

Inter-industry analysis seeks to handle such practical problems as :

- (i) *Industrial mobilization*. The problem is to ascertain the level of output of each industry required to meet national defence needs, as well as to ascertain whether available resources are adequate for those levels of output.
- (ii) *Market research*. The problem is to ascertain the market for a commodity (e.g. steel) which is widely used by other industries in the production of final goods.
- (iii) *Inflationary bottlenecks*. The problem is, for example, to anticipate the demands upon and by the electric power industry in a period of national development.
- (iv) *Employment policy*. One problem is whether a particular recession shall be met by a public works programme, by tax cuts, etc.—each measure having a different impact upon the industrial structure.
- (v) *Structural change*. One problem is to ascertain the effect of a change in technology in one industrial sector upon the markets and costs of other industries.

Before proceeding to set out the basic method employed to analyse any of these problems, it should be mentioned that inter-industry analysis is also referred to as "input-output analysis" or "Leontief analysis", but rarely as "general interdependence theory" or "Wal-

1. "Input-Output Analysis", *Economic Record*, June 1954.

rasian theory". This preference for a new set of names is not to be explained merely by their sales appeal to the comptrollers of funds for economic research. The protagonists of inter-industry analysis are, as the name suggests, genuine empiricists. For them, no economic theory merits discussion unless two questions about it can be answered in the affirmative: "First, can we obtain the data needed to set about testing and applying the theory? Second, can we overcome computational and other problems involved in the practical application of the theory to structural problems?" It is unusual indeed to prescribe that the answers to these two queries determine the respectability of an economic theory. Now the difficulty of testing and applying economic theories is proverbial. Perhaps the most important causes of this difficulty are the erudition of some theories and the inadequacy of statistical series. The pioneers of inter-industry analysis reacted to these obstacles in a typically hard-headed fashion by making assumptions which permit the formulation of simple theories for initial testing, and then foraging for data. Having first overcome these obstacles, their second step was to devise a method of recording the basic data suited to the capabilities of available computing equipment. The final step in solving any particular structural problem is the statement and manipulation of the set of equations specifying the conditions of equilibrium. The next three sections of this paper discuss the nature of these three stages in handling structural problems.

2. *Fundamental Assumptions*

On purely practical grounds, inter-industry analysts make four assumptions as to: the nature of the industry's production function, the existence of short-run normal profit rates, the discontinuous nature of technical substitution possibilities and the existence of a given final bill of goods. The nature of and reasons for these assumptions may be explained briefly as follows.

Because statistical data are usually recorded on an industry basis, the theories of the input-output analysts are stated in terms of the productive activity of the *industry*, not the firm. In order to do this it has been necessary to assume that, for any given collection of productive factors employed in an industry, the output they are capable of producing is the same irrespective of the number of firms into which the industry is organized. This does not, it should be noted, involve any assumption as to whether scale returns in the industry are constant or decreasing.

Having made the industry the basis of the investigation, input-output analysts, rather than discuss competitive theory, prefer to postulate the further assumption that an empirically established normal profit rate will prevail in the industry, at least in the short run. If

entry into the industry is quite free this normal profit rate will be the minimum needed to keep firms in the business. If, however, the relationship between member firms is oligopolistic, one possibility is that a normal profit rate will be fixed at the level which is expected to maximize collective profits for existing member firms—the normal profit rate being higher, the more effective are the restrictions upon entry of new firms. It is clear then that the assumption of a given normal profit rate by input-output analysts is not to be equated, as some commentators have suggested, to an assumption of pure competition. The empirical evidence available for manufacturing industry strongly suggests the prevalence both of oligopolistic relations and of stable short-run profit rates.

The assumption that the output capable of being produced by any given group of factors employed in an industry is the same irrespective of the number of member firms is an essential part of the underpinning of inter-industry analysis. It is worthy of note that the general acceptance of this assumption in economic analysis would have further ramifications. Thus if inter-industry analysis explains the output of the industry, the task of the theory of the firm is to explain the distribution of total industry sales as between member firms of the industry. Such explanation is rendered difficult since, by assumption, the businessman's marginal revenue and marginal cost are constant at all levels of the firm's output so long as the industry's output is unchanged. For example, a businessman who contemplated reducing his volume of output would find his market taken over by a competitor, and in the new position the marginal revenue and marginal cost of both firms would be the same as before. In such a situation the firm's "scale condition"—viz. equate the price of a factor to its marginal revenue product—would not suffice to specify the firm's most profitable level of output. However, discussion of such problems of the firm finds no place in inter-industry analysis.

Let us turn now to the problem of minimizing the cost of producing a particular level of industrial output—a matter which is of as much concern in inter-industry as in other fields of economic analysis. Traditional analysis tacitly assumes that inputs are continuously substitutable and that the technical marginal rate of substitution between them diminishes. Inter-industry analysts, with the help of time series data and direct engineering investigation, point out that this situation is the exception rather than the rule. Inputs are infrequently continuously substitutable and where they are, the marginal rate of substitution may be constant over the possible range of substitution. The characteristic situation is in fact that any method of producing a commodity involves considerable capital equipment, the design of which usually requires that other factors be used in fixed proportions up to plant capacity. A modification of this is the apparent prevalence of

the practice of maintaining in the industry a basic skilled work force which, like the industry's capital equipment, remains constant in size up to its capacity output; the balance, the less skilled section, of the industry's work force tends to vary proportionately with the inputs of materials. In such a productive system, the significant opportunity for choice in productive activity is characteristically not a choice between continuously substitutable factors (which can be solved by the equi-marginal productivity condition), but a choice between a finite number of methods of production with each of which is associated certain capital equipment and fairly closely specified rates of flow of inputs. Thus the view is held by inter-industry analysts that the important choice in productive activity is usually between a new finite alternatives—in fact between two or three or so possible methods of production. The existence of continuously substitutable inputs—and even diminishing technical marginal rates of substitution—is not of course denied any more than it would be denied for example that, in individual cases, the personal deficiencies of a businessman may limit the size of his firm. It is merely that these phenomena are not regarded as the norm in business activity.

Inter-industry analysis is now confronted with a further difficulty. For any practical attempt to replace aggregative or macroeconomic models of our society by models in which individual industries are distinguished, is immediately confronted with the absence of adequate information as to consumers' tastes. However daring economists have been in specifying aggregate consumption functions, no country has yet been furnished with a complete set of commodity consumption functions—notwithstanding the efforts of Richard Stone and his assistants. The reaction of input-output analysts to this situation is, typically enough, to concentrate for the present upon "open" models in which the consumption functions (characteristic of "closed" models) are replaced by a given final bill of goods. The final bill of goods lists the actual quantities of specific commodities which collectively comprise the final demand of Keynesian analysis. In view of the obviously greater explanatory value of "closed" models, it is surprising to find that "open" models are capable of handling a variety of important problems. One such problem discussed in detail below is the industrial mobilization problem which is indeed largely responsible for the tremendous fillip which has been given to inter-industry analysis in recent years.

The foregoing assumptions bring the analysis to the stage of practical feasibility and the next task is the collection of data. Four types of information are required as to: resources (including labour and industrial plant capacities), the final bill of goods, normal profit rates and the state of technology in each industry. Ideally this information should be obtained wherever possible at first hand by a research team

and the data then checked for comprehensiveness and consistency against a series of independently collected transactions tables (or input-output tables). In practice input-output analysts are prone to rather excessive reliance upon the transactions table as a primary source of information.

3. *Description of Industrial Technology*

The second stage in handling structural problems is concerned with the manner of recording technological data. To appreciate this matter it must be realized that computational difficulties are always in the background of inter-industry analysis. Inasmuch as the problems analysed are usually capable of theoretical solution and the basic data are potentially available from engineers, chemists, farmers and others, the computational aspect assumes especial significance. To keep it within reasonable limits, input-output analysts adopt a basic device. This is that an industry's technology, no matter how complex, is recorded piecemeal and each of the pieces is a statement of this form: the input of the factor i used in producing commodity j bears a straight-line relation to the output of j .² This method of describing an industry's technology may be compared with a jig-saw puzzle in which all the pieces are of the same simple shape—and when all the pieces are fitted together, the pattern of technology is revealed. This device has its limitations, but a little exploration shows them to be by no means as great as may first appear.

First of all there are many cases where this device is obviously immediately applicable. For example, in flour-milling we may find the intake of wheat and labour satisfying the straight-line relations:

$$\begin{aligned} \text{Wheat input} &= && 48.6 \times \text{Flour output (bus./sh.ton)}; \\ \text{Labour input} &= && 1,133 + 0.002222 \times \text{Flour output (men/sh.ton)}. \end{aligned}$$

The same kind of relation is found to hold true over a very wide range of industries from blast furnaces and breweries to cement and soap works. However, if scale returns are continuously diminishing, it is necessary to approximate to the curve of diminishing returns by a series of connecting straight lines (on the same principle that we may approximate to a small diameter circle by a hundred-sided polygon). The degree of approximation involved is, of course, the critical consideration. On the other hand, if scale returns diminish discontinuously with constant marginal increments within the ranges, then no approximation is involved. For example, suppose labour requirements in the coal industry comprise a fixed skilled work-force of 8,000 men plus a variable work-force determined by the need for 1,000 men per million tons up to an output of 12 million tons, and for 1,300 men per million

2. i.e. $x_{ij} = b_{ij} + a_{ij} \cdot X_j$, where x_{ij} is the input of i , X_j is the output of j , and a_{ij} , b_{ij} are constants each of which may be positive or zero.

tons for any further production up to 18 million tons per annum, i.e. in range 0-12, Labour input = $8,000 + 1,000 \times \text{Coal output}$ (men/m.tons);
 „ „ 12-18, „ „ = $20,000 + 1,300 \times \text{Coal output}$ (men/m.tons).

It is then possible to ascertain (either by trial and error or by some more refined method) that output will be in one of these ranges. If output will be in the higher range, then the second of these two straight-line relations is the one to be used.

Let us turn now to the possibilities of substitution within the technical horizon of the industry. It has already been pointed out that input-output analysts believe the normal situation to be that the businessman has the choice between a few distinct alternative methods of production—such as producing steel by the open hearth method or in a Bessemer converter—each of which may be described by a set of straight-line relations such as we have been describing. The basic routine of inter-industry analysis is to begin by *assuming* that some particular method of production (or activity) will be used and subsequently, where necessary, to test this by costing both it and any alternative methods to ensure that it is the cheapest.³ If it is not, then the incorrect assumption is replaced and the analysis re-worked. Plainly the skilled investigator will develop methods to minimize the number of incorrect assumptions.

In industries where inputs are continuously substitutable over a range *and* the technical marginal rates of substitution are diminishing, inter-industry analysis must fall back on the technique of approximating by choosing between a finite number of alternatives. In such a situation (if it really exists) inter-industry analysis is seen at its worst. However, the approximation technique can be tested since, once factor prices have been calculated, the process of differentiation can be employed to test whether the equi-marginal productivity condition is satisfied.

In résumé then, inter-industry analysts represent the technological horizon of the industry by a collection of straight-line relations solely for computational convenience. Phenomena of diminishing scale returns and price substitution need not be ignored but can be dealt with

3. The basic procedure for determining relative prices from the complete set of industry cost accounts is set out by W. Leontief in *The Structure of American Economy* (p. 46) for the closed, single resource model.

As to the open inter-industry model, once the level of outputs and inputs in all industries has been calculated, it is then possible to calculate from the assembly of cost accounts the system of equilibrium prices consistent with this level of outputs, *provided* the prices of non-labour scarce resources are pre-determined, i.e. the interest rate and land rents are parameters. In the case of Australia a convenient alternative to pre-determined land rents would be for the prices of Australia's major exportables to be parameters—in which case land rents would be determined as residuals.

by approximation and trial-and-error methods—though these methods undoubtedly place a heavy premium on the use of skill and ingenuity in eliminating incorrect hypotheses and so reducing the volume of computation.

4. *The Mobilization Problem*

The final stage in the method of inter-industry analysis is the handling of the set of equilibrium conditions.⁴ Here we may conveniently take the industrial mobilization problem to illustrate the procedure.

The problem is to ascertain the level of output of each industry necessary to meet the nation's defence needs and to ascertain whether available resources are adequate for those levels of output. The information needed to solve the problem includes: a catalogue of resources (including plant capacities), normal profit rates and the state of technology in each industry which is to be recorded in the way already described. Secondly, information is needed as to the final bill of goods. In the present case the bill of goods will comprise: the matériel requirements of the military departments; the quantities of consumer-goods which will be made available for purchase by private individuals; the investment requirements to ensure the productive capacity required for the programme; and finally exports—imports being netted out of the bill of goods.

Once these two groups of information have been assembled, the method of solving the problem is in principle that of ascertaining the levels of industry output implied by the given bill of goods. That is, the method in essence uses the technical coefficients in the straight-line relations to ascertain just what commodities and factors are used up, directly and indirectly, in finally turning out each item in the bill of goods. In more detail, the method is as follows. For each commodity (e.g. coal) the equilibrium condition is:

$$\begin{array}{ccccccc} \text{Output} & \text{Sale of} & \text{Sale of} & \text{Sale of} & & & \text{Bill of} \\ \text{of coal} = & \text{coal to} & + \text{coal to} & + \text{coal to} & + \dots & + & \text{goods entry} \\ & \text{Industry 1} & \text{Industry 2} & \text{Industry 3} & & & \text{for coal} \end{array}$$

So if there are 200 industries each producing one different commodity, there are 200 such equilibrium conditions. Now if no industry varies the stocks of commodities it purchases, then its purchases equal its requirements to produce the equilibrium rate of output. Thus if Industry 1 is Power Generation, the "sale of coal to Industry 1" is in fact the current coal needs of power stations which bears a straight-line relation to power output. Exactly what this straight-line relation is may be uncertain at first, either because scale returns vary or because

4. In Section 5 of the article "Input-Output Analysis", *loc. cit.*, a standard procedure for solving closed general equilibrium systems was set out. The present section details the corresponding (simpler) procedure for solving open models.

there may be substitution possibilities between coal and oil fuel. *Ad hoc* procedures are used to decide which of the possible straight-line relations will prevail and this is used as a working hypothesis to be proved or disproved by subsequent testing. For example, the relation which has recently prevailed may be used.⁵ The straight-line relation thus specified is then inserted in the equilibrium condition for coal. By carrying out this operation for each coal-using industry (steel, railways, gas, etc.), the equilibrium condition for coal is re-stated in the form: the required output of coal equals the sum of the straight-line relations for coal of all the coal-using industries together with the bill of goods entry for coal.⁶ Repeating this for all 200 commodities produces a set of 200 equations, each of which specifies a relation between the levels of output of some or all commodities. It will normally be found that there is a particular level of activity for each industry which will satisfy this set of relations, and this set of activity levels can be calculated with the assistance of punch-card tabulation or high-speed computers. The validity of the working hypotheses made in the course of the problem can be tested: the hypotheses concerning the range within which output and scale returns lie can be tested immediately;⁷ the hypotheses concerning the cheapest of the various methods of production known to be technically feasible can be tested after the structure of prices consistent with the spread of calculated outputs has been computed.⁸ If any hypotheses are found to be invalid the calculation must be re-worked, so errors are expensive in terms of computing time.

As to the remainder of the mobilization problem: whether available resources and plant capacities are adequate for these levels of output can be found by computing the resource requirements (of labour, etc.) implied by the bill of goods and then comparing these with actual resources. This comparison can be made in close detail and, depending on its outcome, the mobilization programme may be expanded or (more probably) trimmed.

Inter-industry analysis plainly lends itself to use as an instrument of government policy—whether in defence planning, in forestalling bottlenecks in a peace-time development programme, or in endeavour-

5. Thus in Australia during the five years 1944-9, the ratio of *black* coal ('000 tons) to electricity generated (mil. kwh.) was 0.43 approximately, with a mean deviation of 2 per cent.

6. i.e. Output of coal = $(b_{c1} + a_{c1}X_1) + (b_{c2} + a_{c2}X_2) + (b_{c3} + a_{c3}X_3) + \dots + y_c$, where X_1 is the output of Industry 1, y_c the bill of goods entry for coal, and all a and b are non-negative constants. (In terms of the last footnote $b_{c1} = 0$ and $a_{c1} = 0.43$.)

7. This test simply takes the form of checking whether, in terms of the example in Section 3, the calculated output of coal is in fact in the assumed range of 12 to 18 mil. tons.

8. Refer footnote 3 above. Once relative prices have been calculated, the test then takes the form of checking whether, at the calculated factor prices, the method of production (or activity) assumed is in fact the cheapest available.

ing to maintain a state of full employment.⁹ Equally, however, it can be used as an instrument of private business planning. For example, U.S. investigators found that of their country's gross iron and steel output in 1947, 16.6 per cent was exported directly or indirectly, while a further 32.6 per cent was used to satisfy consumers' indirect demands (the demand for cars and canned foods heading the list).¹⁰ This kind of result is of major interest to any industry attempting to evaluate its future markets.

5. Assessment

Perhaps the most important criticism which can be levelled at inter-industry analysts is their past tendency to rely upon single transactions tables as sources of data—thereby creating among their fellow economists the impression that the analysis breaks down in the absence of fixed proportions and constant scale returns. This deficiency will presumably be rectified with the growth of funds available for research teams.

An important limitation to inter-industry investigation is its formulation in terms of a state of equilibrium. It should be pointed out, however, that Professor Wassily Leontief and his associates are working vigorously towards the objective of replacing the open equilibrium version by a closed dynamic model. The demands made by such a model upon statistical sources would of course be considerable.

A lesser criticism of inter-industry analysts is their failure to make due allowance for joint production and for the production of a commodity by more than one industry. The fact is that each of these involves some complication for the simple "one industry-one commodity" type of inter-industry analysis. However, it is perfectly feasible for the analysis to take explicit account of the production by an industry of a "major" and one or more "subsidiary" commodities.¹¹

9. As to this last, cf. Cornfield, Evans and Hoffenberg, "Full Employment Patterns, 1950", *Monthly Labor Review* (U.S. Department of Labor), 1947.

10. Evans and Hoffenberg, *Review of Economics and Statistics*, 1952, p. 124, "The Interindustry Relations Study for 1947".

11. It is necessary to determine by *ad hoc* procedures the ratio in which it is expected these commodities will be produced. As the ratio of outputs of joint products seems usually free to vary over quite a limited range, this is not a major problem. In any event it is possible subsequently to test whether the assumed ratio is the most profitable of the possible alternatives.

However, admitting joint production into an open model virtually necessitates leaving the quantities of all subsidiary commodities *undetermined* in the otherwise completely specified bill of goods. Such a course in turn implies that final demand adjusts itself, via the price system, to the relative rates of output specified by the technology of joint production.

In this footnote "joint production" refers to the case where the production of one commodity places some technical constraint on the firm as to the production of another commodity. Where an industry produces several commodities but there is no such constraint, the case is not one of joint production and the analysis can follow the same procedure as in the single commodity case.

On the other hand, inter-industry analysis is not well fitted to deal with the general case where a commodity is produced in several industries.¹²

For all these deficiencies, inter-industry analysis offers a method of solving practical problems of the first importance. If it is inelegant and crude, this is more than outweighed by its earthy realism. For example, its solution of substitution problems by costing the individual alternatives, while distinctly gawky compared with the traditional use of the infinitesimal calculus, is none-the-less exactly the method used by businessmen themselves. Equally its use of approximation and trial-and-error methods, though they may appear fumbling and inept, is simply designed to produce practical results with equipment which is generally available. Inter-industry analysis is in fact the most promising development in applied economics since *The General Theory* paved the way for aggregative models of the economy.

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12. Of course if the percentage of total output of the commodity which is produced by each of the industries can be pre-determined, the analysis can proceed in the usual way. But this is poor consolation. However, in the special case where a commodity is a joint product in one industry and an independent product in another, the analysis is quite straightforward once the ratio of joint production has been determined.

THE ECONOMIC LIMITS TO POPULATION INCREASE¹

I

What is the economic limit to immigration? In particular, in the absence of foreign loans, is the true limit provided by the adverse effect of immigration on the balance of payments? This problem has many similarities with that facing other countries such as India, whose population increase derives primarily from the excess of births over deaths. But these other countries are not in the happy position of being able to regulate the size of their population, and therefore the issue does not pose itself to them in quite the same form as to Australia.

The motives for Australia's active migration policy are usually stated to be political, while the limits are social and economic. When a change in the policy was decided upon in 1952, economic considerations seemed to be in the foreground. It was a common argument that migration should cease as it was increasing unemployment. Indeed, popular opinion apparently regards the growth of unemployment as indicating the approach of the migration limit. On the other hand, most economists have tended to emphasize the impetus migration is said to give to internal inflation. Yet a third point of view, represented perhaps by Professor Karmel,² stresses the adverse effect on the balance of payments as being, in the absence of foreign loans, the principal limit to immigration.

It is possible to reconcile these three points of view. It will be argued here that some of the effects of a population increase may lead to a fall in real income or real consumption per head in Australia. It may also lead to a change in the distribution of this income. The economic limit is set where this fall in the standard of living together with the change in the distribution of income is no longer compensated, in the view of the people of Australia, by the political and other non-economic advantages of immigration. This definition implies of course that there are always people prepared to immigrate, if only Australia will let them in.

1. I am indebted to Professor J. E. Meade, Mr. T. M. Rybczynski and Mr. R. G. Lipsey for helpful comment and clarification of a number of important points in this paper. They are, of course, not responsible for the views expressed. I also wish to acknowledge a debt to Professor P. H. Karmel, whose illuminating essay on "The Economic Effects of Immigration" in *Australia and the Migrant*, published by the Australian Institute of Political Science (Angus & Robertson, Melbourne, 1953), started me off on this particular line. Attention should also be drawn to three articles which discuss some of the subject-matter of this paper: M. Gottlieb, "Optimum Population, Foreign Trade, and World Economy", *Population Studies*, Sept. 1949; Kingsley Laffer, "The Economics of Australian Immigration", *Pacific Affairs*, Dec. 1952; H. G. Johnson, "Economic Expansion and International Trade", *Manchester School*, May 1955.

2. P. H. Karmel, *op. cit.*

The point of view which regards unemployment as setting the limit to immigration tends to forget that the same authorities which have encouraged the migrants to come to Australia should be able to create the effective demand to provide the necessary employment. The element of truth, as we shall see, is firstly that the ability to create additional employment may be limited by a shortage of capital, and, secondly, that a successful migration programme is difficult when there is a margin of unemployment, but that some unemployment may, under certain conditions and in the absence of certain other policies, be required to avoid inflation.

Three types of assumption will be made in the course of the analysis. It will, for example, be assumed that there is no natural increase in population. This is, of course, patently unrealistic, but it is a type of assumption which helps to isolate the problem under study and simplify the expositoin. The basic argument would not be altered if the assumption were relaxed. Another type of assumption is meant to be some approximation to reality. For example, we shall suppose that diminishing returns tend to rule in the export industries and increasing returns in the import-competing industries. To justify these assumptions would require considerable statistical detail which must be sought elsewhere. Finally, we assume, for example, constant money wage rates. This is one of a number of provisional assumptions which are relaxed later in the analysis.

In spite of the long list of assumptions with which we will begin, this analysis is meant to throw some light on real problems of considerable importance to Australia.

II

The effects of a population increase in the absence of foreign trade will first be briefly summarized. It will be assumed that internal balance is maintained by fiscal methods, that there is no net population increase and investment to begin with, that there is no technical progress, that the proportion of migrants in the work-force is the same as the overall Australian proportion, and that all labour is homogeneous, so that the efficiency of a migrant is the same as that of an Australian.

If we suppose that an increase in unemployment would cause money wages to fall while a decrease in unemployment or an actual excess of demand over supply in the labour market would cause them to rise, then we can define internal balance in terms of money wages. It is the maintenance of that level of employment at which money wages remain constant. It means that total expenditure will have to be automatically increased when the population and hence the labour supply rises. If we prefer to suppose that money wages could rise but

not fall, we can simply say that internal balance means the maintenance of the maximum level of employment compatible with constant money wages.

In Australia the ratio to natural resources of labour, combined with its present proportion of capital, is probably below the optimum or not far above it. Therefore, if the quantity of labour increases and is accompanied by an increase in capital such as to maintain the previous ratio of capital to labour, the average product of labour might rise or at least would not fall sharply. But in the short run, with a given supply of capital, an increase in population is fairly certain to lead to a fall in the average product of labour. Indeed, it is likely to vary by industry; in some industries the ratio of labour to natural resources and capital may well be below the optimum. But the experience of the last few years suggests that overall, with capital constant, the average product of labour would fall as the result of a population increase.

If the ratio of capital to labour is to be restored to its previous position, there will have to be an increase in investment above its initially assumed zero level. Now there is no reason why investment should automatically increase, as it depends on decisions by private enterprise and by governments which may be influenced by many other factors apart from the population increase. If we assume for the moment that investment is increased so as to restore the pre-existing ratio of capital to labour, there will be two effects.

First, resources will be diverted from consumption to investment. This is a short-term effect, as we are assuming that the extra investment in any given period is sufficient to create the necessary capital to balance the population increase of that period. The reduction in consumption will under our assumptions be obtained by fiscal methods. It would be brought about by inflation if internal balance were not maintained.

Secondly, there is the long-term effect on the average product of labour of increasing labour and capital in a fixed proportion with an unchanged quantity of natural resources. As has been mentioned above, at Australia's present stage it is possible that this might lead to an increase in the average product, but at some stage of course the average product of labour must start declining.

If, as has possibly been the case in Australia, the increase in investment is inadequate to restore the ratio of capital to labour, the short-term shift from consumption to investment will be less, but the long-term fall in the average product of labour will be greater.

With constant money wages, a fall in the average and hence the marginal product of labour will involve some rise in the general level of prices. Our assumption of internal balance is stated in terms of

money wages and not of prices. With a constant degree of monopoly, any alteration in the relationship between them reflects a change in the marginal productivity of labour.

III

Still assuming that investment is increased so as to maintain the pre-existing ratio of capital to labour, if the economy is now opened up to international trade, the population at which the average product of labour is at a maximum will, even with unchanging terms of trade, be lower than in the closed economy.

This would be true even if cost conditions were much the same throughout Australian industry. A country shut off from international trade and hence obliged to produce a wide range of goods which in the open economy would be imported, needs a large population, and hence a large home market, to obtain the benefits of the division of labour. In the open economy, specialization is possible with a much smaller population.

This factor is reinforced by another consideration somewhat more special to Australia. Since Australia's export industries are, compared with other industries, generally subject to diminishing returns at a fairly early stage, the relative importance of industries subject to diminishing returns will be higher in the open economy. So it is more probable that when labour and capital are increased in a fixed proportion, the average product of labour falls, or does not rise as much as it would in the closed economy.

The population at which the average product of labour is at a maximum may, for brevity, be termed the "optimum" population. Then, as we have seen, the optimum population will be lower in the open than in the closed economy. But it should be noted that, for any given population, as long as there is any benefit from international trade, the average product of labour must be higher in the open economy. It follows that, when the population is at the optimum in the open economy, although the population will be less, the average product of labour must be greater than when the population is at the optimum in the absence of international trade.³

It will be assumed that in the rest of the world the population and the average product of labour are constant, and that internal balance is being maintained. We ignore the fact that an increase by immigration of the Australian population must be balanced by an equal abso-

3. It was pointed out in *The Australian Tariff: An Economic Inquiry*, by J. B. Brigden and others (1929), and has become an oft-repeated economic doctrine in Australia, that the optimum population would fall if the tariff was removed. This has tended to be confused with the quite distinct proposition that with an increase in population the optimum tariff rises. Both propositions may be true but one does not automatically follow from the other.

lute decrease in population in the rest of the world. If the migrants come in the main from Britain, Australia's principal trading partner, then some consideration should perhaps be given to the effect of the emigration on Australia's foreign trade. Nevertheless the effect of the immigration is likely to be much more significant.

The increase in expenditure necessary to maintain internal balance with an increased population can be expected to lead to an increase in imports. This is the first reason why a deficit may develop, and can be described as the "income effect" of the population increase on the balance of trade.

This increase in imports does not follow automatically from assuming that the marginal propensity to import of a given population is positive. The way the increase in expenditure is allocated among different goods depends on the inter-action of three concurrent changes in our model. First, the population is increasing. Secondly, real disposable income per head may have altered, probably having fallen.⁴ Thirdly, the proportion of national income devoted to investment will have risen. The more investment rises the more real disposable income per head available for consumption falls in the short run and rises in the long run.

How a change in real disposable income per head affects the demand for imports depends upon the income elasticity of demand. If imports have an income elasticity of demand greater than unity, a fall in income per head would mean a reduction in the proportion of income spent on imports. It is now possible that, although the increase in population causes aggregate disposable income to rise, expenditure out of disposable income on imports falls absolutely. But this would require a large fall in disposable income per head. Furthermore, it is doubtful whether Australia's imports as a whole have an income elasticity of demand greater than one. If the income elasticity of demand for imports is unity then, provided aggregate disposable income rises, an increase in consumption imports is certain. Similarly it is certain if the income elasticity of demand is less than unity or if real disposable income per head rises.

Finally, it may be a reasonable presumption for Australia that the import content of marginal investment is greater than the import content of marginal consumption. In this case an increase in investment will cause a rise in the proportion of total expenditure devoted to imports. It is therefore a further reason why the population increase can be expected to increase imports.

4. It will be recalled that we are assuming that internal balance is being maintained by fiscal methods. Hence, if investment increases more than private savings, there will have to be a rise in tax collections to maintain balance. This is the reason for the reference to *disposable* income—or income after taxes.

In addition to the income effect of a population increase on the balance of trade there are the "price effects", since an increase in demand for the products of some industries is likely, even with money wages constant, to alter their prices.

By how much expenditure on different groups of home-produced goods rises depends upon the same three factors which determine by how much expenditure on imports rises. Here it will be assumed that there is some increase in expenditure on all the main groups, although real income per head may fall and the income elasticity of demand for some groups may be greater than unity.

The increased expenditure on home products, including exportable and import-competing goods, will tend to increase the pressure on natural resources of all kinds. If we use the term "rent" to describe the payment, per unit of given quality, to all those factors whose quantity remains fixed, then rents will rise. The principal fixed factor is natural resources, but rent can also be taken to include the payment to the owners of any capital goods whose quantity does not increase. Money wages remain constant, for we are assuming that the initial increase in incomes was just sufficient, at the constant money wage, to create an additional demand for labour equal to the increased labour supply.

So prices of home-produced goods will rise, the whole of the increased price going to the higher rents. This rise in prices with constant money wages represents a fall in real wages. It reflects a fall in the average and marginal product of labour due to the operation of diminishing returns.

If the foreign elasticity of demand for exports is less than infinite, prices of exportable goods will then rise. The rise in rents which is the cause of this rise in the prices of exportable goods will have been due partly to the increased expenditure on other home-produced goods the production of which requires natural resources which are, at least to some extent, substitutable with the natural resources used in the production of exportable goods. Hence, unless natural resources are completely immobile as between export and other industries, for the prices of exportable goods to rise it is not actually necessary that some of the increased expenditure resulting from the population increase is spent on exportable goods. But since some of the increased expenditure will undoubtedly be spent on exportable goods, we can be doubly sure that in the export industries there will be a rise in rents and thus, if the elasticity of demand for exports is less than infinite, a rise in prices. If the elasticity of demand is greater than unity the value of exports will then fall. This fall in exports caused by the operation of diminishing returns would be the second reason why a deficit may result from the population increase.

On the other hand, if the foreign elasticity of demand for exports were less than unity, the rise in the price of exportable goods would increase the value of exports. This factor would then be responsible for improving the balance of trade. Although some statistical studies seem to have led to the conclusion that elasticities of demand in foreign trade are surprisingly low, this is, in my view, an unrealistic hypothesis for Australia when anything but the very short run is considered. The full implications of an inelastic demand for exports are not always appreciated. It means that a reduction in the volume of exports due to government policies or to poor seasons would raise the value of exports. An export tax would improve the balance of payments. The country could obtain a greater volume of imports for a lower volume of exports. Hence the degree of trade restriction is below the optimum. The very fact that this solution to Australia's balance of payments problems has not been widely canvassed suggests that an inelastic demand for exports is not a realistic hypothesis.

If the foreign elasticity of demand for exports were infinite the prices of exportable goods would remain unchanged, unless the complete elimination of exports were insufficient to provide for the extra home demand for exportables.

Some of the increased expenditure will also be spent on import-competing goods. Although in Australia natural resources are undoubtedly less important in the production of import-competing goods than in the production of exportable goods, there will still be some tendency for the prices of these goods to rise owing to the increase in rents. On the other hand, if we assume that, unlike the export industries, the import-competing industries are subject to significant economies of large-scale production, then there will also be an opposite tendency causing the prices of these goods to fall. Hence it is quite possible, and it will be assumed in the subsequent analysis, that in spite of the rise in rents, prices in the import-competing industries fall with an increase in output. A fall in the prices of import-competing goods will lead to a fall in imports and therefore could offset some part, or conceivably the whole of the deficit in the balance of trade caused by the income effects and the effect on exports of diminishing returns in the export industries. But the economies of large-scale production may be subject to some time-lag, and it is possible that this favourable effect on the balance of trade becomes strong only when the rise in expenditure has been maintained for some time.

These primary price effects are likely to have secondary effects. Thus, if, as is quite probable, the home demand for exportable goods is inelastic, the rise in price will lead to a decrease in expenditure on other goods, including imports and import-competing goods. Hence this secondary effect taken by itself tends to improve the balance of trade. Furthermore, the fall in demand for import-competing goods

will in itself tend to cause a rise in their prices, raising not only imports but also affecting expenditure on exportable goods again. But we have now arrived at a tertiary effect.

The fall in the prices of import-competing goods caused by the original increase in expenditure will not only lower imports but may also affect expenditure on exportable goods. If import-competing goods and exportable goods were readily substitutable, either directly, or indirectly through home-trade goods, there would tend to be a fall in the demand for exportable goods. On the other hand, the fall in the price of import-competing goods has raised real income, and the demand for exportable goods probably rises when real income per head increases. On balance no substantial change in exports may result from the secondary effects of the operation of increasing returns in the import-competing industries.

It must be remembered that these secondary and tertiary effects will be outweighed by the primary effects. Thus the secondary fall in the demand for import-competing goods will certainly be offset by the primary rise, so that on balance there will be an increase in demand for import-competing goods.

So far we have been assuming that capital and labour are increasing proportionately. If capital remained constant while the population increased, the average and marginal product of labour would tend to fall much more rapidly and widely than when the ratio of capital to labour was being maintained. Although a tendency for the average product of labour to rise is still likely to show itself in those industries which require an increase in demand to enable them to make full use of their capital, prices generally would tend to rise more or fall less when capital is constant than when it is increased proportionately. So if the elasticity of demand for exports is greater than unity the deficit would be greater.

Hence a temporary rise in investment, while it may raise the short-term deficit insofar as a shift from consumption to investment raises imports, will reduce the long-term deficit.

Irrespective of whether additional investment takes place or not, it seems reasonable to conclude that the initial impact of a population increase is to cause a balance of trade deficit. But it is not impossible that the operation of increasing returns in the import-competing industries is sufficiently strong and rapid, or the demand for exports sufficiently inelastic, for such a deficit to be avoided.

IV

Whether a depreciation of the exchange rate or a lowering of the internal cost level would be an adequate method of eliminating the balance of trade deficit depends on the elasticities of demand for

imports and supply of exports in Australia, and on the elasticities of the rest of the world's demand for Australian exports and supply of Australian imports.⁵

It is probable that the rest of the world's supply of imports into Australia is highly elastic. Not only is Australia one of many buyers in the markets of most of the goods she imports, but manufactured products—which form the predominant part of Australia's imports—are generally in highly elastic supply in the producing countries. As already discussed, the elasticity of demand for exports is also likely to be greater than unity, although it will be far further from infinite than the elasticity of supply of imports.

On the other hand, both the demand for imports and the supply of exports may be very inelastic. The supply of exports is inelastic, at least in the short run, for many reasons, some of which are common to agricultural exporting countries. The inelasticity can be attributed not only to diminishing returns but also to a decline in the amount of work per person engaged in the export industries, which follows upon an increased income per head. The demand for imports can be expected to be very inelastic at a low level of imports, once the quantity of imports has been reduced to certain basic materials needed for production and to certain essential components of investment programmes which are so specialized that their production would be quite uneconomic in Australia.

If the elasticity of demand for exports is greater than unity, it follows that, provided at least one of the home elasticities—the elasticity of demand for imports or the elasticity of supply of exports—is greater than zero, a depreciation will improve the balance of trade, though indeed a very substantial depreciation may be necessary to eliminate even a small deficit.

But if both of these home elasticities were zero, an alteration in the exchange rate would make no difference to the balance of trade deficit. Furthermore, not only could depreciation not remedy a deficit, but it would be certain that there is a deficit to remedy. For, with a zero elasticity of demand for imports, the only factor which could otherwise have avoided an external deficit in the first place, namely the operation of increasing returns in the import-competing industries, would have no effect on the balance of trade. Provided the income effect on imports was positive, imports would have been certain to increase. At the same time with the elasticity of demand for exports greater than

5. It will be evident that I draw heavily in this paper, and in particular in this section, on Mrs. Joan Robinson's partial equilibrium analysis of the effects of an exchange rate adjustment on the balance of trade. See "The Foreign Exchanges" in *Essays in the Theory of Employment* (Oxford, 1947, Basil Blackwell), reprinted also in the American Economic Association's *Readings in the Theory of International Trade* (Philadelphia, Blakiston Co., 1949).

unity, exports would still have been certain to fall, provided any part of the increased income resulting from the population increase was spent on exportable goods.

These extreme conditions might be implied in the argument that the balance of payments deficit provides a limit to population increase, for not only depreciation, but also an import tariff would be unable to remedy a deficit.

It is in fact impossible for the elasticity of demand for imports to be zero over the whole range of the demand curve. If it was zero at any and every price it would mean that Australia is prepared to pay all its income and more to obtain a given quantity of imports. For any quantity of imports there must be some price, however high, at which exactly that quantity will be demanded. It follows that, provided the depreciation is sufficiently great, it can always remedy a balance of trade deficit.

It may of course be true that there is some minimum or subsistence basket of goods which every member of the community must have to live on whatever is considered a subsistence standard of living. This basket is very likely to include imports and home-produced goods with a basic import content. But the elasticity of demand for these goods cannot continue to be zero once income per head has fallen below the level required to pay for the basket.

It is perhaps more reasonable to assume the supply of exports to be perfectly inelastic, particularly in the short run. But if some time is allowed and the depreciation is sufficiently great, the supply of exports should also increase. The demand at home for exportable goods can no more be completely inelastic over its whole range than the demand for imports can. Furthermore, while the supply of specific products may be completely inelastic, as the price offered for exports rises, other products will become exportable.

It can therefore be concluded that, if the elasticity of demand for exports is greater than unity, a balance of trade deficit caused by the population increase could be remedied by depreciation.

If the elasticity of demand for exports is less than unity then in the first place a balance of trade deficit is less likely. In the second place it becomes possible that a depreciation could not remedy a balance of trade deficit even though the home elasticities are greater than zero. For a depreciation to be effective it is a sufficient condition that the sum of the foreign elasticity of demand for exports and the home elasticity of demand for imports is greater than unity.⁶ But even if it is not, a depreciation may still be able to remedy a deficit if the home

6. These statements of elasticity conditions are strictly accurate only if we start in external balance. But since we are concerned with an initial deficit they are subject to an adjustment which will be slight if the initial deficit is not very great. See A. Hirschmann, "Devaluation and the Trade Balance", *Review of Economics and Statistics*, Feb. 1949.

elasticity of supply of exports is low enough. In Australia one suspects that the low elasticity of supply of exports would save the situation and indeed makes the choice of assumption about the elasticity of demand for exports rather unimportant. If the elasticity of supply of exports is actually zero, then provided the elasticities of demand and supply of imports are greater than zero, a depreciation must improve the balance of trade.

V

How will the terms of trade be affected by the initial impact of the population increase and by the subsequent alteration in the exchange rate?

If both the elasticity of supply of imports and the elasticity of demand for exports were infinite, then the rise in the home demand for exportable goods would not affect the price of exports while any change in the prices of import-competing goods would not affect the prices of imports. Similarly the subsequent depreciation would leave the relative prices of imports and exports unaffected. In other words, if Australia played such a small part in the market for its imports and exports that no change in Australian supply and demand conditions or in the Australian exchange rate could affect world prices, then the terms of trade would remain unaltered even though a deficit may have been caused by the population increase and this deficit has been remedied by depreciation.

But if the prices of Australian exports are influenced by the quantity of Australian supplies on the market, while the elasticity of supply of imports remains infinite, two cases can be distinguished fairly easily where the terms of trade must improve.

If the economies derived from large-scale production in the import-competing industries were so great that the resulting fall in imports was large enough to offset the other factors making for an external deficit, then depreciation would not be necessary. The rise in the price of exports, which will have resulted from the increased home demand for exportable goods, would be the end of the story. With constant import prices, an improvement in the terms of trade would then have taken place. A similar result would ensue if the population increase did cause a deficit, but if the elasticity of supply of exports were zero, so that the subsequent depreciation did not affect the foreign price of exports.

But since it is improbable that the population increase fails to create a deficit, or that, if the subsequent depreciation is sufficiently great, either the elasticity of demand for exports remains infinite or the elasticity of supply of exports remains zero, a somewhat more complicated analysis is called for.

To restate the problem, we want to know how export prices will move relative to import prices if an increase in population takes place and if simultaneously expenditure is adjusted so as to maintain constant money wages while the exchange rate moves so as to maintain external equilibrium. We shall assume that the elasticity of demand for exports is greater than one and less than infinite. Hence it is possible for Australia to affect its terms of trade, and provided the elasticity of supply of exports and the elasticity of demand for imports are not both zero, for external equilibrium to be maintained by exchange rate adjustment.

There is one reason why an improvement in the terms of trade is likely to result from a population increase. Natural resources, the supply of which is fixed, will become scarcer so that rents will rise relative to wages. Hence the prices of goods in the production of which natural resources are more important will rise relatively to the prices of goods in the production of which labour is more important. If capital has been increased proportionately with labour, then the prices of those goods which are "natural-resource-intensive" will rise relative to the prices of goods which are "labour-plus-capital-intensive". Since in Australia exportable goods are generally more "natural-resource-intensive" than goods competing with imports, this factor creates some presumption that the prices of exportable goods will rise relative to the prices of importable goods, so that the terms of trade will improve.

In a very simple model, with only two commodities—exportables and importables—with perfect mobility of factors between the industries producing these commodities, with no economies of scale, with the fixed factor, natural resources, more important in the production of exportables, and provided there is not actually a decrease in expenditure on exportables, it would be certain that an increase in the variable factor, labour, would improve the terms of trade.

Economies of scale in the industries producing importables would be an additional factor causing the price of exportables to rise relative to the price of importables, this being a second reason why the terms of trade may improve.

But the real world is not as straightforward as our simple model. First, we should allow for the case where capital is not increased proportionately with labour. If no increase in capital took place at all, the terms of trade would only improve if exports were more "natural-resource-plus-capital-intensive" than importables. In the case of Australia there does not seem to be any certainty that this is so. Hence, if the increase in capital has been insufficient to maintain the original ratio of capital to labour there is less likelihood that the terms of trade improve.

Secondly, since import-competing products are not perfect substitutes for imports, the analysis cannot be carried on in terms of two

commodities only. Some of the increased expenditure will have been spent directly on imports, quite apart from any change in imports due to a change in the prices of import-competing products. To remove the balance of trade deficit due to this "income-effect" a depreciation is necessary additional to the depreciation needed to remove the deficit due to the rise in rents. This factor is likely to cause a deterioration in the terms of trade. This deterioration will be the greater the more of the increased expenditure has gone on imports, the less is the elasticity of substitution between imports and import-competing goods and the greater is the elasticity of supply of exports. If there had been no increased expenditure on imports or the elasticity of substitution were perfect, this "income effect" would not operate.

Thirdly, since natural resources are not perfectly mobile between industries, whether the prices of exportables rise relative to the prices of import-competing products depends also on how much of the initial increase in expenditure is spent on each of these products, on the demand relationships between them and on the degree of immobility.

If natural resources are perfectly immobile between industries then we can be sure that the population increase raises the price of exportables relative to the price of import-competing goods only if the former are subject to diminishing returns and the latter to increasing returns. As more labour enters the exportable industry the average product of labour falls; as more labour enters the import-competing industry the average product of labour rises. So, provided expenditure on both goods increases, the price of exportables must rise and of import-competing goods fall. But if both industries are subject to increasing or to diminishing returns, how their relative prices move depends both on which industry yields more rapidly increasing or decreasing returns and on how much of the increase in expenditure goes to each product.

It seems, therefore, that there is no clear presumption that the terms of trade would improve or worsen as the result of a population increase. But one may perhaps be permitted a "hunch". The main factor is probably that the increased population will spend a considerable part of its higher total income on imports and that the depreciation needed to eliminate the resulting deficit is likely to worsen the terms of trade unless the elasticity of supply of exports is very low. This would be of far greater importance than the various "price" effects arising from the rise in rents and from the economies of scale. In other words—and this is not a new discovery in the theory of international trade—income effects are likely to outweigh price effects.

Finally, it should be noted that, if the import content of marginal investment is greater than the import content of marginal consumption, then in the short run an increase in capital, by increasing the income effect on imports, makes necessary a greater depreciation and hence a

more adverse movement in the terms of trade. On the other hand, as we have seen, the effect of an increase in capital is to make a long-run improvement in the terms of trade more likely.

It is now possible to come to some provisional conclusions. These are subject to the important simplifying assumptions that there is no technical progress and—in the absence of the population increase—no net investment. If no attempt is made to increase investment when population increases, there may be a fall in real income per head for two reasons. First, the ratio of labour to capital and natural resources has increased. Secondly, the terms of trade may possibly have worsened. If some investment takes place to balance the population increase, the long-term fall in real income owing to the changed factor proportions will be less and may be completely averted. A long-term fall in the terms of trade will be reduced or an improvement strengthened. But there will have to be a short-term fall in real consumption per head and, if the import content in investment is higher than in consumption, a short-term fall in the terms of trade superimposed on the long-term rise or fall.

VI

A depreciation of the exchange rate, particularly if it has to be frequent or continuous, may be impracticable. Various kinds of institutional obstacles are conceivable, but perhaps the main reason why the authorities might be reluctant to employ the exchange rate weapon would be a fear of destabilizing speculative capital movements. It will also be generally accepted that a reduction in the internal cost level is likely to be impossible. Hence it may be necessary to remedy the balance of payments deficit with an import tariff. The effects of tariffs on the internal distribution of income will be considered later. The effects of the population increase on the so-called "infant-industry" argument for protection will be disregarded.

In any given situation there is an optimum tariff at which the increase in real income resulting from the beneficial effects on the terms of trade of a marginal increase in tariffs is just offset by the fall in real income resulting from the maldistribution of resources brought about by the tariff. If both the elasticity of demand for exports and the elasticity of supply of imports were infinite, the optimum tariff would be zero.

The level of the optimum tariff may change when the population increases. If our previous analysis led us to the conclusion that the population increase would cause a deterioration in the terms of trade, and if the foreign elasticities of demand for exports and supply of imports fall as Australia's exports and imports rise, then the optimum tariff would rise with a population increase. Nevertheless, if an increase in the tariff is to eliminate the whole or a substantial part of the exter-

nal deficit resulting from the population increase, it could be expected that the tariff would have to be raised above the optimum.

Therefore, if we consider what seems the more probable case, that the population increase did cause an external deficit and that, if this deficit were remedied by depreciation, there would be a net decline in the terms of trade, then it is possible to say that if tariffs are used to remedy this deficit, there are three reasons why income per head may fall as a result of the population increase.

First, there is the fall due to the changed factor proportions within Australia. Secondly, there is that fall in real income brought about by tariffs which is equal to the fall which would have been brought about if the external deficit had been remedied by depreciation modified by the optimum tariff. Thirdly, and this is the new category, there is that fall in real income caused by the maldistribution of resources resulting from a level of tariffs *above* the optimum. This can be attributed to the institutional or speculative factors which have made depreciation or a reduction in the internal cost-level difficult or impossible.

These generalizations must be modified for the case where the elasticity of supply of exports is zero. Then, if we disregard the effects on capital movements and on the internal distribution of income, there would be no difference between the effect of depreciation and of a tariff. The change in the distribution of resources and in the terms of trade brought about by a tariff would be the same as the change which would be brought about by depreciation. Furthermore, if the zero elasticity of supply of exports were combined with an infinite elasticity of supply of imports, neither a tariff nor depreciation would cause any change in the terms of trade.

VII

Let us now remove the important assumption that internal balance, and hence constant money wage rates, are maintained in Australia.

There are two reasons why inflation may not be avoided when a large-scale immigration programme is in progress. First, the government may find it politically difficult to reduce consumption by fiscal methods in order to offset the rise in investment needed to maintain the capital-labour ratio. Secondly, it may be not only politically difficult but also undesirable, from the point of view of the migration policy, to maintain that slight excess of supply over demand in the labour market which is generally necessary to avoid a rise in money wages. The existence of a "margin" of unemployed greatly increases the difficulties both of obtaining and of absorbing migrants.

If direct controls and wage restraint make it possible to maintain a high but stable level of total expenditure such that there is an excess of demand over supply in the labour market without wages continually rising, our analysis remains unaltered. But if it is not possible to con-

trol the inflation, there will be a continuous increase in expenditure over and above the increase which would be necessary to maintain internal balance with an increasing population. In this case a continuous or periodic depreciation, or if this is impossible, constant increases in tariffs, will be necessary to maintain external balance.

Furthermore, even if there is a "margin" of unemployment, if prices have risen owing to a decline in the average product of labour, a fall in the terms of trade, or an increase in the tariff above the optimum, money wages will rise if some part of wages, at least, is tied to the cost of living. But provided all money wages do not rise proportionately with prices, this rise will be at a decreasing rate and will not be continuous.

It may be that in some industries there is, at least in the short run, a minimum ratio of capital and natural resources to labour, and that it is possible neither to increase the quantity of capital nor to transfer capital or natural resources from other industries. In this case the ability of these industries to absorb labour is limited. If in all industries there is such a minimum ratio of the fixed factor to labour and if the fixed factor is fixed for each industry and not only for the country as a whole, so that it is perfectly immobile, then beyond a certain point the marginal product of labour will be zero. Additional labour cannot be employed irrespective of how great an increase in expenditure takes place. This is an extreme situation which is unlikely to be approached in Australia unless there is a large and sudden increase in population unaccompanied by an increase in capital. But it may be a fair description of conditions in those under-developed countries suffering from "disguised unemployment".

We also assumed earlier that labour is homogeneous. But there is reason to believe that, owing to higher mobility, both voluntary and enforced, to deliberate selection by the official migration authorities, and to other factors, the average migrant has been more efficient from the point of view of the Australian economy than the average Australian. Hence the marginal and average product of labour are likely to have fallen less in the diminishing returns industries and to have increased more in the increasing returns industries. The fall in real income due to the changed factor proportions within Australia will be less, while the "price" effects are more likely to have brought about an external surplus rather than a deficit. But the income effect will be unaffected and will still pull in the direction of a deficit.

VIII

The effect of the population increase on the internal distribution of income has so far been neglected. It is likely to influence the community's judgment about the desirability of the population increase itself.

In a simple model the population increase will cause the rate of real rents to rise relative to the rate of real wages. More broadly, incomes of the original inhabitants will be redistributed towards the owners of the fixed factors and away from people who compete with migrants. The extent to which this represents a limit to population increase depends first on whether such a redistribution is in a desired direction or not, and secondly whether methods of redistributing incomes back again are feasible.

The desirability of the redistribution must depend on some sort of arbitrary criterion. One could say that a marginal redistribution against labour and in favour of rentiers is always bad.⁷ Or one might regard any redistribution involving a large and sudden fall in real income to any section as bad. More simply, one could assume that the initial distribution of income is the best and that a change in any direction is undesirable.

In practice adequate compensation is unlikely. Policy must take into account that an indirect redistribution by means of population increase may be more readily accepted by the losers from the process than deliberate acts of redistribution, even if they are specifically designed to offset the effects of the population increase.

Yet one particular method of internal redistribution of income is very relevant to the present argument. A tariff will shift incomes away from the producers of exportable goods towards the producers of import-competing goods. If import-competing goods are labour-intensive while exportables are natural-resource-intensive, there may be an additional reason for raising the tariff when the population increases. Then the tariff will lessen not only the effect of the population increase on the terms of trade but also on the internal distribution of income.

If the elasticity of supply of exports is zero then, as we have seen, a uniform ad valorem import tariff will have the same effect on the balance of trade as a depreciation. But the important distinction is that the depreciation will give a bonus to producers of exportables. Hence, once we take the internal distribution of income into account and wish to avoid a shift of income towards producers of exportables, the lower the elasticity of supply of exports the more desirable becomes a tariff as a remedy for the balance of trade deficit.

The internal distribution of income may influence the various factors which determine the impact of the population increase on foreign trade. Thus the distribution of income may affect the community's marginal propensity to consume different goods. It may affect various of the elasticities. It is likely to influence the propensity

7. This would be in the tradition of Australian economic thought. See *The Australian Tariff: An Economic Inquiry*, *op. cit.*

to save and hence the probability of inflation being avoided or of sufficient investment taking place.

Yet it is difficult to say in what direction these effects would operate. One may agree that if the population increase raises the share of national income going to rentiers and if rentiers have higher than average incomes, there will be a shift in aggregate demand towards goods with a high income elasticity of demand. Similarly one might expect the community's propensity to save to rise. But there is no reason to expect the share of wages or of rents in the national income to alter in a particular direction. On the one hand the number of wage-earners increases while the number of owners of fixed factors (rentiers) does not change. But on the other hand, the average income of wage-earners falls and of rentiers rises.

IX

Let us now summarize the limits to population increase, remembering that this is a static analysis of a very dynamic problem, and that we assume no technical progress and no net investment in the absence of population increase. The analysis is best applicable to a large once-for-all immigration movement. But it could readily be extended to a dynamic model which allows for rates of population increase, capital formation and technical progress, and for the expectation by the community of a gradually rising standard of living.

First, if no increase in investment takes place, there is likely to be a fall in the average product of labour and hence in average real income. If sufficient investment takes place to avoid this fall, there will instead have to be a short-term fall in real consumption per head. This short-term fall in real consumption or the alternative long-term fall in real income provides the first limit.

Secondly, if a long-term balance of trade deficit results, and if it is possible to remedy this deficit by depreciation, there may have to be a long-term fall in the terms of trade. If an increase in investment takes place, the long-term fall in the terms of trade will be less, but provided the import content in marginal investment is higher than in marginal consumption, there will be an additional short-term fall.

No long-term balance of trade deficit would result if the fall in imports resulting from increasing returns in the import-competing industries and from increased home expenditure on the products of industries subject to diminishing returns offsets, first, the rise in imports owing to the greater total expenditure, and, secondly, the fall in exports owing to diminishing returns in the export industries. If the demand for exports is inelastic there will be a rise in the value of exports and hence even less probability of a balance of trade deficit.

Furthermore, even if such a deficit does result, it is, as we have seen, by no means certain that the terms of trade after the deprecia-

tion has taken place would be adverse relative to the situation before the population increase. Hence this factor may not operate as a limit to population increase at all.

Thirdly, it may not be possible to remedy a balance of payments deficit by depreciation. It can then be remedied by raising import tariffs. If the elasticity of supply of exports is greater than zero and if the tariff was initially at the optimum, the tariff may then have to be raised above the optimum. This will lead to the third reason why real income per head may fall.

Fourthly, the population increase may be unavoidably associated with inflation, with all its social and economic disadvantages. If depreciation is impossible the inflation may provide a further reason for an increase in tariffs above the optimum. The internal and external effects of inflation may be the most important practical limits to population increase by migration.

Fifthly, the population increase may affect the internal distribution of income in a way which is considered undesirable by the community—or by whoever decides what the limits to population increase are. It may not be practicable to offset these effects by other measures within the control of the authorities.

Sixthly, a definite limit to population increase is presented by unemployment caused by a shortage of capital and natural resources. If a minimum ratio of the fixed factor to labour is required, then beyond a point any additional labour is bound to be unemployed. Yet it is possible that a reduction in the average working hours enables the existing quantity of the fixed factor to be spread over the whole employable population. Even if there is unemployment, the newcomers need not starve since income can be redistributed from the employed population. So even this does not provide an absolute limit to population increase.

Seventhly, there may be a minimum real income per head representing a subsistence basket of home-produced and imported goods. The community may prefer a population size which keeps real income per head well above this minimum, but this certainly does provide an absolute limit.

Finally, if a zero elasticity of supply of exports were combined with a zero elasticity of demand for imports, then neither depreciation nor tariffs could remedy a balance of payments deficit, and this would be an eighth possible limit to population increase. But it is impossible, as has been pointed out, for either the elasticity of demand for imports or the elasticity of supply of exports to be zero over the whole of their range.

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AN EMPIRICAL MICRO-STUDY OF SOME FACTORS INFLUENCING FARM NET INVESTMENT*

1. *Introduction*

In 1952 the Australian Agricultural Council adopted the aims put forward by the Commonwealth Government for increasing agricultural production in the following five years. The amount of the increased production sought by the Government varied for different products but for wheat the area aimed to be sown in 1957-8 is 113 per cent of the average area sown over the years 1947/8-1950/1, and for wool the production aimed at is 114 per cent of the average production over the years 1947/8-1950/1. It is evident that the attainment of these aims would necessitate a large increase in farm investment.

This article outlines an attempt to gain some insight into some of the factors which influence farmers in making their decisions on expenditure for farm investment.

The problem of finding which factors were influential was approached in two ways. First, some readily available and measurable factors, which it was thought would influence farm net investment, were selected. Then the effect of these factors on the farm net investment of a sample of farmers during the years 1949/50-1952/3 was measured statistically. Secondly, these farmers were asked why they had purchased each investment item bought between 1949/50-1952/3. The reasons they gave for making these purchases were analysed to determine which were the most important reasons, which reasons were common to various avenues of expenditure such as plant and machinery, building, and clearing, and the association, if any, between the reasons and the amount of expenditure.

A sample of 300 farmers was selected at random from 3,148 wheat and sheep farmers in the eastern wheatbelt of Western Australia. Of these 300 farmers 240 were interviewed. Complete financial records for the years 1948/9-1951/2 were available for 137 farms, or 4.6 per cent of the farm population.

In deciding what would be the most appropriate factors to select

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for correlating with net investment some results of research by Cochrane,¹ Klein,² Katona³ and Ashby⁴ were considered.

In view of their studies it was decided to test whether net income, age of farmer, years spent farming present property on own account, size of debt at beginning of period, amount of debt repayment, and amount spent on replacements were influential factors in determining farm net investment.

2. *Definition and Description of the Factors*

Net Investment

For the purpose of this study net investment is defined as the total expenditure on the purchase of additional items of plant and machinery, building, fencing, water supplies, and clearing during the years 1949/50-1952/3. An adjustment was made to this figure where there had been an increase or decrease in the numbers of livestock carried between the beginning and end of the period. Expenditure on both repairs and replacements was excluded from the net investment figure.

A list was made of all plant and buildings owned by each farmer and the age of each item noted. For any item less than five years old the farmer was asked whether it was an addition or a replacement and to explain why he had bought it. Plant was valued by the farmer at what he thought each item would bring at a clearing sale on the day of the interview. Buildings were usually valued at the cost of erection. These values were used as an estimate of the expenditure on plant and buildings.

Expenditure on clearing was obtained from the taxation returns. Only contract clearing was shown as a separate deduction and no estimate was made of expenditure on clearing done by the farmer.

The farmer was asked how much he had spent on additional fencing and water supplies for the period 1949/50-1952/3. This lump sum was used as the estimate of fencing and water expenditure.

Stock, other than sheep, were valued at the value shown in the taxation return. It was found that farmers' valuations of sheep for taxation purposes varied from five shillings to three pounds per head. Also, individual farmers occasionally changed their valuation figure from year to year. To obtain uniformity, ease of calculation, and to overcome the problem of varying valuations the most common value of a pound per head was used for each year.

1. Cochrane, W. A., "Farm Family Budgets—A Moving Picture", *Rev. Econ. Statist.*, 29: 189-98.

2. Klein, L. R., "Estimating Patterns of Saving from Sample Survey Data", *Econometrica*, 19: 438-55.

3. Katona, G., "The Effect of Income Change in the Role of Saving", *Rev. Econ. Statist.*, 31: 95-103.

4. Ashby, A. W., "The Farmer in Business", *J. Agric. Econ. Soc.*, 10, No. 2: 91.

In addition to the total figure for farm net investment for the period 1949/50-1952/3 the net investment made in each of the two-year periods 1949-51 and 1951-3 was calculated. The figures for the two-year periods were not as good an estimate of investment expenditure as the figure for the whole period because expenditure on fencing and water was available for only the whole period and adjustments had to be made to expenditure on clearing because the years for which taxation returns were available did not coincide with the investment period.

These combinations of years 1949-53, 1949-51, 1951-3 were selected for two reasons. First, periods of not less than two years were made because of the "lumpy" nature of investment. The two- and four-year periods partly damp down the fluctuations due to an unusually great expenditure in any one year. Secondly, the net incomes were available for the years 1948/9-1951/2. An examination of the yearly figures showed that for each of the years in the two periods 1948-50 and 1950-2, the annual income was roughly the same within each period, whereas between the periods the net incomes doubled, i.e. the 1950-1 income was double that of 1949-50.

The investment period was a year later than the income period because farmers usually receive their main cheques, those for wheat and wool, late in their financial year. Furthermore, from what some of the farmers said, it appears that to avoid indebtedness, they pay cash from the income they have received and do not spend from income which they anticipate receiving. Therefore purchases were usually not made until the year following that in which the income was received. This delay was accentuated, also, by the lag in the supply of orders. For these reasons it was decided that the comparable investment and income periods would be 1949/50-1952/3 and 1948/9-1951/2, respectively.

In Table I is shown the amount spent on net investment, in each of the periods under consideration.

This table shows that the chief avenues of farm investment (plant, building, clearing, etc.) accounted for approximately the same share of the total expenditure in each period. That is, the increase in income and investment did not greatly change the direction of investment expenditure.

The table also shows that the amount of net investment spending rose considerably between the first and second two-year periods. It rose to 230 per cent, while income rose to 194 per cent, of the levels in the first two-year period. Is this greater change in investment than in income due to the change in income or to other causes?

This cannot be answered definitely for several reasons. When the amount of investment was calculated no allowance was made for the difference in value between similar items, one of which might have

TABLE I
Direction and Amount of Investment Spending

| | 1949-51 | 1951-53 | 1949-53 |
|---|---------------|----------|----------|
| Total Expenditure on Plant | £83,700 | £177,700 | £261,400 |
| Average Expenditure on Plant | £300 | £650 | £477 |
| % of Total Expenditure | 68% | 63% | 57% |
| Total Expenditure on Building | £22,100 | £62,100 | £84,200 |
| Average Expenditure on Building | £80 | £230 | £154 |
| % of Total Expenditure | 18% | 22% | 19% |
| Total Expenditure on Fencing and Water .. | Not available | | £46,800 |
| Average Expenditure on Fencing and Water .. | Not available | | £85 |
| % of Total Expenditure | Not available | | 10% |
| Expenditure* on Clearing | £7,400 | £20,600 | £28,000 |
| Average Expenditure on Clearing | £27 | £75 | £51 |
| % of Total Expenditure | 6% | 7% | 6% |
| Increase in Livestock Value | £9,580 | £21,700 | £31,280 |
| Average Yearly Farm Change | £35 | £80 | £57 |
| % of Total Expenditure | 8% | 8% | 7% |
| Total Expenditure on Investment | £122,800 | £282,400 | £452,000 |
| Average Farm Expenditure | £450 | £1,030 | £825 |
| % Total | 27% | 62% | 100% |

* This does not include cost of clearing done by the farmer, it is only the amount he spent on contract clearing.

been obtained four years previously and have decreased considerably in value, and one purchased recently and worth nearly the new price. This would make the value of investment higher in the second than in the first period even though exactly the same number and quality of items were bought. Also, no allowance could be made for changes in valuation as the seasons changed. The survey occupied a period from mid-May to mid-September and machines such as drills or combines would have been worth more while seeding was in progress in May and June than they would be once seeding had ceased. It is doubtful if this caused a very big error. There was considerable inflation during the period under consideration which partly offset the difference between actual purchase price and present price because second-hand machinery did not fall in value as much as it may have done if prices had been stable. Another factor which may have limited investment in

the first period and tended to increase it in the second was the increasing availability of plant and material in the latter years. A further factor which may have increased investment spending in the second compared with the first period was the introduction of special depreciation allowances.

That the increase was due to some of these factors rather than to the rise in income is suggested by considering the number of items bought. The number of buildings erected rose to 180 per cent of the first period and of machines purchased to 130 per cent, while the figure in Table I indicate rises of 280 per cent and 212 per cent, respectively, in the amounts of money spent on these items.

Although it is not shown in Table I, some farmers had a negative investment in both periods. This was due to the decline in livestock causing a disinvestment greater than the net investment due to purchase of plant, buildings, etc. In the first two-year period, 22 of the farmers had a negative investment while 4 had a negative investment in the second two-year period. This was partly due to bad season causing a decline in stock numbers in the first period, and partly to the constant valuation of stock while other investment expenditure rose. Considering the period 1949-53, 6 farmers had a negative investment.

For the whole period the yearly net investment for each farmer ranged from -£35 to £2,250. For the first two-year period 1949-51 the net investment ranged from -£450 to £2,050 and for the second two-year period 1951-3 it ranged from -£30 to £2,850. These figures show that there was considerable variation in the amount of net investment spending between the individual farmers. In Section 3 there is a discussion on the effect of the factors selected had in influencing these differences.

Net Income

This is defined as the gross income from all sources as shown on the farmer's income tax return less all allowable farm tax exemptions except for those of a capital nature, viz. clearing, boring, and dam sinking and depreciation. Depreciation was excluded because the amount of machinery varied from farm to farm and because some farmers had not used the special depreciation allowances. Therefore to place all farmers on the same footing this exemption was not deducted from the gross income.

Income was separated into the three periods, 1948-50, 1950-2 and 1948-52 as for net investment. The large increase in incomes for 1950-2 compared with 1948-50 was partly due to the boom in wool prices. Thus income from sheep and wool made up about 39 per cent of gross income in the first of the two-year periods and 50 per cent in the second of the two-year periods. Wheat made up about 58 per cent and

49 per cent of the gross income in the successive two-year periods. The size and range of the net income for each period is shown in Table II.

TABLE II

Average, Median and Range of Yearly Incomes for Three Periods

| Period | Net Income | | | |
|--------------|------------|--------|---------|---------|
| | Lowest | Median | Highest | Average |
| 1948-50.. .. | £100 | £2,500 | £9,000 | £2,700 |
| 1950-52.. .. | £992 | £4,850 | £16,450 | £5,200 |
| 1948-52.. .. | £660 | £3,500 | £12,800 | £3,950 |

Farmers with incomes below the average in the first period received a relatively greater percentage rise in income in the second period than did farmers with incomes above the average.

The increase, from 1948-50 to 1950-2, in net income (median) was 93 per cent, in gross income 78 per cent, and in farm expenditure 63 per cent. Thus there was a large increase in the amount of money available from net income for allocation between farm investment and non-farm investment, debt repayment, saving, taxation and consumption.

Age of Farmer

This was taken as the farmer's age at the time of the interview. In a partnership the age of the partner having the final managerial responsibility was selected. The range in age was 22-72 years. The average and the median age was 47 years.

Years Spent Farming the Present Property on Own Account

This factor was selected because it was considered that where a farmer had been on a property for many years there would be fewer investment opportunities than on a property recently purchased. The period ranged from 2-47 years with a median of 16 years and an average of 17½ years. Farmers who had been farming on their own account less than five years were included if previously they had been working the property for a relative and so had the complete financial records.

Size of Debt at Beginning of Period

This was obtained by capitalizing the interest paid in 1948-9, as shown in the income tax returns, at a rate of 4 per cent. This procedure gives the average indebtedness of the farmer during the year. How the debt was distributed in 1948-9 is shown in Table III.

TABLE III

Amount of Debt Outstanding 1948-9

| | No Debt | £0- £1000 | £1001- £2000 | £2001- £3000 | £3001- £4000 | £6001- £9000 | £9001+ |
|--------------|------------|--------------|-----------------|-----------------|-----------------|-----------------|--------|
| % of Farmers | 31 | 17 | 19 | 12 | 7 | 9 | 5 |

Amount of Debt Repaid

This was calculated as the difference between the farmers' indebtedness, calculated as above, for the years 1948-9 and 1951-2.

Table IV shows the year by year position of both debt repayment and debt incurrence. There were 108 farmers with some indebtedness during the period, but the table appears to show a greater number as some farmers borrowed in all three of the years under consideration. Of the 108 farmers, 20 fully repaid their debt, 50 reduced it, and 38 owed more in 1951-2 than they did in 1948-9.

TABLE IV

Debt Repayment and Incurrence 1948-52

| Year | No. of Farmers Repaying Money | Average Amount Repaid | % of Total Amount Repaid each Year | No. of Farmers Borrowing Money | Average Amount Borrowed | % of Total Borrowed in each Year |
|---------------------|--|-----------------------------|---|---|-------------------------------|--|
| 1948/49- 1949/50 | 67 | £2,354 | 53.4 | 32 | £1,130 | 23.4 |
| 1949/50- 1950/51 | 57 | £1,227 | 23.6 | 38 | £1,138 | 28.0 |
| 1950/51- 1951/52 | 54 | £1,254 | 22.9 | 45 | £1,668 | 48.6 |

It is possible that the rise in farmers' incomes caused the apparently contradictory situation of a large rise in income being associated with a reduction in debt repayment and an increase in the number borrowing, because the large amounts of provisional taxation assessed on their income caused some farmers to borrow to pay their taxation.

Amount Spent on Replacements

This consisted of expenditure only on plant and buildings, because expenditure on water and fencing replacements was not available. The amount of expenditure was estimated in the same way as expenditure on additional investment goods. Over the whole period the average expenditure was £584 compared with £631 on the same items of net investment.

3. Discussion of Factors

The results of the statistical analyses show that of the six factors studied *income* alone had a significant relation to the level of investment spending. It appears that *expenditure on replacements* may also be related but it was found that the apparent correlation is due to both replacement expenditure and investment expenditure being positively correlated with income.

The two factors which show least correlation with net investment, namely *age of farmer* and *size of debt at beginning of the period*, are those selected as being likely to have the effect of depressing the level of investment.

In the case of *age of farmer*, it is suggested that this low correlation may have been due to a lag in investment created by the shortage of money during the depression and shortages of labour and materials during the war and post-war years. It is probable that farmers over a wide age range needed to make large investment expenditures when finance and materials became more available in the late 'forties and early 'fifties. Under these circumstances it is probable that any influence age may have would be hidden.

In the case of *size of debt at the beginning of the period* the low correlation may have been due to the selection of a poor measure. Thus while it was shown that size of debt apparently did not influence the level of investment spending it may be that a measure which related debt and capacity to repay would have provided a measure with a significant correlation with the amount of net investment.

The factor *years spent farming present property on own account* was used to obtain some measure of the effect of past spending on investment on present spending. It was assumed that farmers who had long occupied a property would have largely carried out their plans for developing it, whilst those newly on a property would still have many improvements to carry out. Whilst not significant, there is a much greater correlation than with the last two factors considered. That this was not a significant correlation may be due to the point made previously regarding the backlog of investment due to the depression and the war.

The simple correlation between *debt repayment* and *investment* approached closely to the 5 per cent level of significance. In association with income, debt repayment was tested in a multiple correlation with investment but was not significantly correlated.

To differentiate further farmers were classed according to whether they had no debt, had increased their debt, had repaid all their debt, had repaid more than half their debt, or had repaid less than half their debt. Those classes with significant differences between their investment expenditures are shown in Table V.

TABLE V
Debt Repayment and Investment

| Farmers who had | Spent on Investment | |
|--------------------------------|---------------------|----------------|
| | Less than £656* | More than £656 |
| Increased Indebtedness | 13 | 25 (1) |
| Repaid all Debt | 15 | 5 (2) |
| No Debt in Period | 7 | 18 (3) |

* £656 was the medium amount of net investment.

$$(1) \times (2) \quad \chi^2 = 10.4468^{**} \quad 1 \text{ d.f.}$$

$$(2) \times (3) \quad \chi^2 = 8.0317^{**} \quad 1 \text{ d.f.}$$

$\chi^2 = 6.635$ for significance at 1 per cent level, and 10.827 for significance at 0.1 per cent level.

Using the Chi Square test for significance it was found that farmers who were not in debt, or who were increasing their indebtedness, spent significantly greater amounts on investment than those farmers who repaid their debt in the period of the survey. The farmers who were increasing both debt and investment were probably partly responsible for the lack of an inverse correlation between debt repayment and investment. Those farmers who were repaying debt did not have a significant difference in the amount of investment compared with those who had no debt. That farmers who were increasing their debt should have a high rate of investment was not unexpected as most of them had borrowed to expand their farm area, which necessitated the purchase of extra equipment to work the new ground.

Replacements spending did not have an effect on investment spending. It was included because, as with debt repayment, it was thought that anything which competed with investment for a share of net income might influence the amount of investment. (Family expenditure was not considered as a factor because few farmers had balance sheets and so the amount was not generally available.)

Net income is shown to have a high correlation with net investment in each of the three periods examined.

4. *Analysis and Discussion of Farmers' Reasons for Investment Expenditure*

To gain a knowledge of the factors influencing their investment decisions farmers were asked, (a) the reasons for their purchases of all plant and machinery in the previous five years, (b) the reasons for the erection of all buildings built during the last five years, and (c) the reasons for clearing operations done in the last five years. Unfortunately, in the last group a considerable number of farmers were asked the reasons for clearing done in the last year or two instead of over the five-year period.

TABLE VI

Reasons for Farm Investment and Their Frequency of Occurrence

| 132 of 137 farmers bought machinery (reason) | % of 123 with reasons (%) | 72 of 137 farmers erected buildings (reason) | % of 67 with reasons (%) | 81 of 137 farmers cleared land (reason) | % of 53 with reasons (%) |
|--|---------------------------|--|--------------------------|---|--------------------------|
| Specific job | 58 | Protection | 12 | | |
| Technical efficiency | 58 | | | Technical and cultural | 23 |
| Expansion or development | 37 | None before | 39 | Expansion | 32 |
| Improve facilities | 26 | Improve facilities | 30 | Final improvement | 19 |
| Labour | 14 | Labour relations | 33 | | |
| Supplement or complement | 11 | | | | |
| Special depreciation allowance | 4 | Special depreciation allowance | 0 | Taxation deduction | 7 |
| | | | | Other | 28 |
| | | | | Economic and psychologic | 26 |
| | | | | Finance | 13 |

All of the reasons given by the 224 farmers visited were analysed and those reasons with a similar meaning grouped into classes. The classes formed from the reasons given for the investment groups, plant, building and clearing are those shown in Table VI. The numbers shown are for those farmers in the sub-sample of 137. In some cases no record was made of the farmer's reason for his investment expenditure and the percentage is of those giving reasons, not of those who made an expenditure.

In each of the investment groups about one-third of the farmers gave *expansion* as the reason for their investment expenditure. In two cases this expansion was made partly as a result of the Commonwealth Government's call for increased production but usually it was associated with the individual's desire to improve his own position. In the case of clearing, this reason was given much more frequently by the lower and middle income groups than by the higher income groups. This class *expansion* is important not only because of the frequency with which it was given but because expenditure associated with it was usually for large amounts, i.e. purchase of tractors, seed drills, ploughs, etc., erection of buildings, and costs of clearing.

The second class of reason is "*improve facilities*". Into this group were placed reasons such as "more convenient", "independence", "too small before", and "better facilities". About a quarter of the farmers in each group gave this reason for their investment spending. It was given most frequently as a reason for building, but was usually associated with the construction of additions to existing sheds rather than with the erection of new buildings. With machinery, except in the case of shearing plants where the farmer wished to make himself independent of his neighbours or shearing contractors, this reason was usually given for expenditures on items such as post-hole diggers and borers, grain augers, lighting plants, etc. In clearing, also, it was associated with cleaning up odd corners or pockets of timber and it was not associated with large amounts of expenditure. This reason is in contrast to the previous one in that it mainly comprises expenditure on getting things just right rather than on large developments to increase production or income. That this reason should occur so frequently was probably an expression of the good times farmers were enjoying at this period, which allowed them to obtain items they could have done without if finance had not been easily available.

Least frequently given was the reason "*taxation deduction*". For a part of the period of the survey special depreciation allowances for expenditure on plant and building were available, while expenditures on clearing, dam or bore sinking, and purchase of rabbit netting were allowable as total exemptions from income for taxation purposes. These figures support the point made previously that these allowances had a small direct effect on farm investment expenditure.

Brief comments on the other classes of reasons are made below. Most prominent of these was "*specific job*". It was the most frequently given reason for plant and machinery purchases. It took the form of the answer "I bought a scarifier so I could scarify the land", i.e. the obvious answer to any question asking why one had bought a piece of equipment. It was usually amplified by a further reason. The fact that farmers who bought machinery averaged two reasons each was not so much that they gave a different reason for each item of plant but that two or three classes of reasons were given for one item, and the rest of the items purchased were bought for reasons in one or other of these classes. In the case of building the obvious answer of "*protection*" was not often given but that indicative of expansion, namely "none before", was most important. This may mean that the farmer considers it to be self-evident that it is necessary to have a building, but that this is not the case with implements, where various ones do similar work.

Equally frequently given, for plant, was the class of reasons "*technical efficiency*". This class of reasons included "economy", "timeliness" or "reserve" and in the case of clearing, "scientific advances",

"improve rotation" and "grow clover". This reason was important for clearing because it was associated with clearing large areas of light lands which were largely worthless before the part trace elements play in plant and animal nutrition was discovered. For machinery, also, this reason was often given for expenditure on expensive items of plant. It concerned the utilization by the farmer of new developments to increase the efficiency with which he could run his farm. Much sand-plain, for instance, has been converted from a rabbit-breeding area to highly productive clover pastures due to these discoveries.

The reason "*labour*" in the case of machinery, was usually concerned with labour-saving devices such as bag-loaders or the purchase of a second tractor to avoid night work. With building it was associated with the erection of cottages, or quarters, for employees. As the introduction of tractors lowered the labour requirements of farms the fact that workers' cottages took priority over farm houses (13, 13; 20, 35; were the respective numbers erected in each of the two-year periods) suggests that the improvement of housing of employees became essential if labour was to be either retained on, or attracted to, farms in the post-war years.

The class of reasons "*psychologic and economic*", contains the reasons of those farmers who were clearing because they did not wish to see any land idle, or Crown land unselected.

Finance was mentioned as a reason for clearing. That it was not more frequently given was probably due to the question being, "Why did you buy (or clear) . . . ?" If it had been extended to ask why it was bought at a certain time the financial reason would probably have occurred more frequently. In the case of clearing two farmers said that when prices were high was the best time to develop, and the other one said he did so because he had the money available.

The class of reasons for investment in building and machinery were tested, using a Chi Square test, to see if they differentiated between high and low investment spending. No difference was found by these tests.

5. Conclusion

It was found that the proportion of net income allocated to investment changed significantly following a general doubling of farmers' incomes. Whether this change was due to the change in the level of income received or to effects due to increasing availability of materials and the method of estimating net investment could not be decided with the information available.

Examination of the reasons for investment showed that a great number of investment purchases were made to expand or develop the property. Nearly equally important, at this time, were purchases to make things easier, or more convenient, or more pleasant on the farm.

Important, too, was the desire to increase the efficiency of utilization of land or machinery and to introduce economy into the production process.

It would seem that investment is a function of income, but provided that income is satisfactory, considerations of increasing ease and comfort of working conditions, improving techniques of production, and expansion of the production process are the chief factors influencing farmers in their investment spending.

Further work on the relationship of debt repayment, replacements spending and investment to income would probably be of value in predicting how farm investment will change as incomes change.

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APPENDIX

The results of the analyses of the relation between net investment and the factors selected are shown below.

Correlations

Farmer's average yearly net farm investment (1949-53) and

| | r^5 |
|--|-----------------------------|
| (1) Age of farmer | = -0.0235 n.s. ⁶ |
| (2) Size of debt at beginning of period | = -0.0482 n.s. |
| (3) Years spent farming present property on own account | = -0.1082 n.s. |
| (4) Debt repayment | = -0.1334 n.s. |
| (5) Amount spent on replacements | = 0.1858* |
| (6) Average yearly net income (1948-52) | = 0.5045*** |

Also correlation of

| | |
|--|-------------|
| (7) Net investment 1949-51 and net income 1948-50 | = 0.2040* |
| (8) Net investment 1951-3 and net income 1950-2 | = 0.4723*** |

Regression Equations

| | |
|-----------------|-------------------------|
| Correlation (6) | $y = £297.5 + 0.1348 x$ |
| „ (7) | $y = £277.1 + 0.0628 x$ |
| „ (8) | $y = £295.6 + 0.1407 x$ |

Where y = net investment, x = net income.

5. r is the correlation coefficient. $r = 0.1679$ for significance at the 5 per cent level.

6. The 5 per cent level of significance is shown by *; the 1 per cent level by **; 0.1 per cent level by ***, and not significant by n.s.

Multiple Correlation

Average investment 1949-53 on average income 1948-52 and average yearly expenditure on replacements.

Regression $t^7 = 23.264^{***}$

b^8 income $t = 6.347^{***}$

b replacements $t = 0.763$ n.s.

7. t is a statistic used for comparing regression coefficients.
8. b is the regression coefficient. It measures the rate of change of a dependent variate as the independent variate changes.

WOOL PRICES AND PASTORAL POLICIES, 1867-75

An Episode in the Development of Australian Wool Markets

I

From 1868 to 1871 the Australian wool-growing industry was faced with its most severe crisis between the 'forties and the 'nineties. A heavy and sustained fall in prices was aggravated by widespread drought in the late 'sixties, by an upward trend in costs—particularly in wages and shearing costs—which reflected the general upswing in economic activity after the post-gold-rush deflation, by the heavy burden of indebtedness incurred during the buoyant expansion of the early 'sixties and by the reluctance with which consumption standards were adjusted to altered conditions. By its nature the crisis precluded two avenues by which the individual wool-grower may have sought relief. Unable to reduce production costs by lowering wage-rates, he was equally powerless to economize by reducing labour requirements per unit of production. Such short-term expedients as were adopted were patently uneconomic and had led to decreasing returns by 1870, while a tight market for pastoral finance drastically curtailed long-term projects to increase productivity. Apart from minor economies in running expenses, therefore, only two lines of adjustment afforded any prospect of success. The first lay in the development of supplemental income-producing activities like tallow production. The other, to which this paper is devoted, was the attempt to reduce marketing and associated costs and to increase gross realizations by reshaping the channels and altering the techniques by which Australian wool was exported.

In broad terms the existing export mechanism consisted of the consignment, through intermediary agents in Australia, of 80-90 per cent of the clip to agents in London who arranged for its sale by auction at the grower's risk. This procedure involved a normal delay of up to five months between shearing and the receipt of the proceeds from London. Two main techniques had been involved to overcome this delay. A small local market, which had achieved some degree of institutional stability by the 'sixties, eliminated the problem entirely for the few small growers who patronized it. Discountable liens on wool, becoming more important as the direct links between individual growers and their English financiers weakened, provided accommodation for the greater number of the remainder. This mode of finance was central to the business tactics of the Australian exporting agents and, indeed, to the organization of the whole export trade. Liens required an endorsement by a third party before they were discounted by the banks. Two pressures tended to narrow the choice of endorser to the exporting agents.

On the one hand this was still the era of the agency, in which nearly every squatter required the services of an agent for the conduct of his business and, above all, for the consignment of his wool. To this agent, who knew the clip and in whose hands it rested, he naturally tended to turn for endorsement. On the other hand, preferential treatment appears to have been given to bills known by the bank to have the backing of one with a knowledge of and interest in the produce, a tendency which was reinforced by the development of wealthy concerns specialized in wool-exporting. This, in turn, provided the endorser with good business reasons why he should handle the export of the clip. It seems certain, in fact, that by the end of the 'sixties he had established an actual right to control, or at least to oversee, the consignment of the hypothecated produce.¹

Among the exporting agents in Australia there existed a most significant grouping. The numerically smaller section, composed of specialized wool or stock and station agencies and other concerns whose primary connections were with the wool trade, was responsible for consigning an average of over 60 per cent of the wool exported through Victorian ports in the two seasons 1870-2. The remainder was handled by merchants whose interests were rather more widely spread and to whom the export of wool was a sideline.² This latter group of general merchants provided the leadship in the incident under review, while the specialized houses tended to stand aloof.

To understand their role it is necessary to go back to the end of 1868. In December the directors of the Colonial Bank of Australasia decided that, in response to urgent representations from graziers, the Bank would be willing to undertake the consignment and sale of wool in London.³ The reception given to this announcement indicates that dissatisfaction with marketing methods was being felt even before the full gravity of the price situation was realized. The offer of an alternative to the existing market channels⁴ naturally aroused opposition from sections of the mercantile community which condemned the move as

1. See the law case involving the London & Australian Agency Corporation Ltd., reported in the *Argus*, 25th October 1872; also a letter from G. Walker (Inspector of the Bank of N.S.W.) to the manager of the Bank's Melbourne branch, 18th June 1870, in the possession of Goldsbrough, Mort & Co. Ltd., to whom the author is indebted for permission to examine and use manuscript records relating to its activities in the nineteenth century.

2. Examples of the three types of concerns are, respectively, Richard Goldsbrough & Co., G. D. Gill & Co., and Buckley & Nunn. The calculations in this paragraph have been made from material contained in the Victorian Custom Bill of Entry, a detailed analysis of imports and exports published by authority in *The Journal of Commerce of Victoria*, Melbourne weekly.

3. Melbourne *Argus*, 13th January 1869.

4. While S. J. Butlin, *Foundations of the Australian Monetary System*, (M.U.P., Melbourne, 1953), pp. 507-8, makes it clear that the Banks had exercised this function in the 1840's, controversy contemporary with this 1868 move, though not entirely unanimous, leaves little doubt that the practice had been largely if not wholly discontinued and that this was, to all intents and purposes, a real innovation.

bad banking practice and as an unwarranted interference with the business of established concerns.⁵ On the other hand, many squatters felt that direct bank participation in the marketing process would not only reduce the financial charges burdening them but that other specifically marketing costs would be saved by the elimination of the middlemen-handlers. Even prominent and wealthy graziers supported the allegation that . . .

“The entire profits of pastoral tenants . . . have been well-nigh swallowed up by the combined charges of commission agents; and now that wool has fallen and a succession of bad seasons has been experienced, it is impossible for the squatter to bear these exactions any longer.”⁶

The directors' decision did more, however, than bring discontent to the surface. It emphasized the insecurity of the position the general merchants held in the wool trade. They acted as pastoral financiers, agents and shippers, and occasionally as buyers in the Sydney and Melbourne wool markets. The first two of those interests had been steadily undermined since the late 'fifties by the development of the large specialized wool houses. As the organization of the trade and their position in it was largely determined by the institutions for the provision of short-term credit to both the wool industry and the export trade, the new role of the Colonial Bank seemed a further threat. Perhaps the threat was not a serious one,⁷ for their position was bulwarked by the institutions for the provision of long-term finance, but it must be considered in conjunction with other tensions. Commissions yielded by a depreciated commodity were falling; financing producers on a falling market was in fact a gamble, and the protective measures which that role necessitated were not popular ones; the direct interests of merchants who produced or bought wool were suffering. To the marginal wool-merchants these represented a formidable set of circumstances. It was for these reasons that, after the reports of the first sales of the 1869 clip had arrived from London, the mercantile community initiated a movement for the reform of the wool trade.

II

In Sydney, an unofficial meeting of merchants held early in October 1869 decided that it was necessary to improve the manner in which Australian wools were sold in London. A long controversy in the correspondence columns of the *London Times* had confused rather

5. See, for example, the letters from James McBain, a dissenting director of the Bank and manager of one of the larger specialized wool houses, in the *Argus*, 23rd and 25th January, and the *Argus* leader of 28th January 1869.

6. Reported in the *Argus* leader, 6th February 1869.

7. In 1879, a decade later, 8.7 per cent of the import of Australasian wools into London was conducted by nine banks. Vide *The Australian Insurance and Banking Record*, 17th March 1890, Melbourne monthly.

than clarified the most appropriate points for reform. In communicating with the Melbourne Chamber of Commerce, therefore, the meeting suggested that a committee be appointed to examine the organization of the trade by making an on-the-spot investigation in London.⁸ Representative of wool-growers, merchants and bankers met in Melbourne early in November. As it was felt that "the growers were entitled to dictate to their agents at home how and when their wool should be sold",⁹ a group was nominated to join with that already named by the Sydney meeting.¹⁰ The "agents at home", against whom the attack was levelled, were, in fact, those at whom criticism and demands for reform were most readily levelled. Specialized wool-import merchants having well-established contacts with colonial export agents, their functions were to supervise the storage of the wool, to prepare it for sale, to engage a broker to sell it at the auctions and to render the account sales to the grower. Their position was therefore central and at the same time particularly vulnerable. Yet among those nominated to investigate the probity and efficiency of the London trade the Victorian mercantile group included, paradoxically, Messrs. F. G. Dalgety, W. F. Moore, R. Gibbs, P. W. Flower and F. Huth, all London wool importers.

It seemed, however, that the appointment of these men from among the ranks of those vitally interested in the workings of the wool trade was a natural step. Not only were they resident in London but they were the experts who knew better than others the practices and customs of the trade, who could discern the bottlenecks and wastages and who were in the best position to press for any reforms they might recommend. Their interests, moreover, appeared to coincide with those of the merchants, bankers and commission agents of the colonies. They too were feeling both the financial gamble and the reduced commission incomes. Blackwood, the colonial partner of the Melbourne unit of the Dalgety network, had, in fact, informed the Melbourne meeting that both he and his London firm favoured modifying the organization of the London sales.

Yet the first fundamental cleavage in interests and approach between the mercantile group in London and the colonial merchants and wool-growers was revealed on the receipt, by the Melbourne Chamber, of Dalgety's letter accepting the convenership of the joint committee appointed. Though willing to institute a public inquiry if it were earnestly desired, he felt that "the Importers' Committee have already carried out the wishes of the colonists so far as they can at present

8. For an account of the activities of this meeting see the *Sydney Morning Herald*, 6th October and 3rd November 1869.

9. Reported *Argus*, 3rd November 1869.

10. The N.S.W. representation consisted of Sir Daniel Cooper, Messrs. John Peter, Donald Larnach and William Mort, all resident in London.

be carried with advantage to the growers and to the trade in general".¹¹ The committee of which he wrote was that of the New South Wales and Van Dieman's Land Association, an organization of London wool importers formed in 1836, whose last general meeting had been held in 1846.¹² In sympathy with the demands being made in London and Australia, and to protect their own interests, the members of the committee had decided, in October 1869, to increase the number of auction sales series from four to five in the coming season. This was the extent of their palliative action, for though, after reports had reached them of the Sydney meeting, they had had before them a motion calling for the reduction of selling brokers' commissions from 1 per cent to $\frac{1}{2}$ per cent, it had been withdrawn without discussion. For the importers it had been sufficient, that is, to endeavour to increase the gross prices realized by increasing the number of sales in the hope that smaller offerings would encourage better biddings.

The growers, however, wanted to carry the matter much further. A specific set of problems and demands was forwarded to London for the guidance of the joint committee appointed. Indicative of the general *malaise* was the request that it consider the value of changing the whole fabric of the market by greatly increasing the number of sales series even to the extent of abolishing their periodicity altogether, or by facilitating direct shipments to other English or continental ports.¹³ Their real concern, however, lay in the charges made against their wool. Two fertile fields for discontent related to the weights on the basis of which the pastoralists were paid. One arose from the variation between station weights and warehouse weights, due mainly to climatic differences, which had formerly seemed to favour the grower. Now, it was alleged, all increases were being weighed out in London. The other concerned the calculation of the allowance which it was necessary to make the buyer for the weight of the wool-pack—the "tare". Again the growers claimed that this always favoured the buyer and reduced the quantity of actual wool for which payment was made. Two further requests affected their realizations more tangibly. The committee was asked to scrutinize closely the possibility that more efficient and economic management could produce lower warehouse charges, which were deemed to be disproportionately high, and to endeavour to effect some reduction in the commissions paid both to importing merchants (!) and to selling brokers. If the colonial merchants, obviously unable to sympathize wholly with all these demands, were nevertheless willing to lend them their support in the hope of realizing their

11. *Argus*, 4th March 1870.

12. *The Sales of Australian Wools in London—Report of the Committees, Minutes of the Committees and Evidence*, London, 1870, p. 62; hereafter referred to as the *Committees' Report*.

13. See also the opinions of "Anglo-Australian" recorded in the *European Mail* and reprinted in the *Argus*, 17th February 1870.

own more modest claims, no such considerations affected the attitude of the importing merchants in England. Their position, clearly enough, was that while they might, like Dalgety, feel the need for some reform, that could constitute no more than a slight modification of existing institutions and practices. When, therefore, the representatives of New South Wales and Victoria met jointly in London and appointed a subcommittee, five of whose eight members were of the London importing trade, to conduct a public inquiry, "informed circles" were in little doubt about the way in which the conflict of interests which they represented would be resolved.

By the time the subcommittee commenced its hearings in January 1870 it had become apparent that the embarrassment which the colonists' proposals presented to the majority of its members was not to be lessened by the presence of Sir Daniel Cooper, the *enfant terrible* of the gathering. First Speaker in the N.S.W. Legislative Assembly, baronet, and now a wealthy merchant resident in London, he had become recognized as the unofficial spokesman of the growers. Ceaselessly he put the squatters' side of the question; constantly he sought clarification, poking at the curtains which modestly covered the more tender or unsightly areas of the trade and accepting the barely disguised contempt and rebukes of the witnesses; continually he returned to the attack, making himself "troublesome and conspicuous".¹⁴ The combined skill of the chairman and the witnesses was barely sufficient to stem his questions and divert his suspicions. With a show of completeness, however, the subcommittee called for evidence from selling brokers (who, on their second appearance, insisted on doing so jointly), from import merchants and from warehousemen. Their report on the evidence, containing their recommendations, was completed in February and signed by all members of the separate N.S.W. and Victorian committees¹⁵ with the exception of Sir Daniel Cooper and Mr. John Peter from the elder colony, and forwarded to Sydney and Melbourne.¹⁶

The expectations of the cynics were fulfilled. While "The convenience of merchants themselves would be materially promoted if wool could be sold to advantage in London or elsewhere whenever they saw fit . . . your committee have no change to recommend, and are convinced that monthly or private sales and direct shipments to other ports would operate most prejudicially to the best interests of the trade".¹⁷ Warehousing was "upon the whole satisfactory"; "it would be imprudent to disturb" the method of taring.¹⁸ While the committees were willing

14. "Anglo-Australian's" report of the proceedings of the committees appearing in the *Argus*, 14th April 1870.

15. A delegation from South Australia, nominated too late to participate in the inquiry, declined to add their names to the others.

16. A copy of the report and the minutes of evidence was reprinted in serial form in the *Sydney Morning Herald*, between 5th and 19th May 1870.

17. *Committees' Report*, p. ii.

18. *Ibid.*, p. iii.

to give some support to the value of a reduction in brokers' charges, the commissions charged by importers were considered commensurate with their place in the trade. On the whole, "Your committee are unanimously of the opinion that the mode in which wool sales have for very many years past been conducted has been that most conducive to the best interests of the flock-owners; and that those interests could only be imperilled or sacrificed by disturbing that policy or substituting an experimental one."¹⁹

A special subcommittee of the Melbourne Chamber of Commerce was appointed to consider these findings. Though prefaced by the statement that it modified the conclusions of the London meeting "only with caution", and though it laid down that "the utmost that can be ventured upon is gradual modification", its report²⁰ reflects the depth of feeling in the colonies. "Without in the least insinuating any disparagement of the skilled witnesses . . .", it reads, "it is beyond question that their judgments and opinions . . . take a very strong bias or colour from the situation in which [they] find themselves." It was disturbed, too, by the "many features partaking of the character of monopoly". The weight of the London committees' argument against an extension of the number of sales was recognized, however, and it contented itself with a vague advocacy of the minimization of such artificial restraints to trade. On the questions of warehousing and brokerage a strong plea for reform was entered. Two suggestions of greater novelty were also made. One was the reorganization of the N.S.W. and V.D.L. Association, or its possible replacement by some body which was visualized as a London Chamber of Australian Commerce. The other, which the general committee of the Chamber was unwilling to accept, was the recommendation that the usance on wool drafts on London be extended from sixty to ninety days.

In Sydney considerable perturbation was aroused by the failure of two of the colony's representatives to sign the London committees' report. Mr. John Peter in a separate statement found that he disagreed widely, though not fundamentally, with the majority. Sir Daniel Cooper condemned nearly every branch of the London trade, and he extended his remarks to include the main report and the investigating subcommittee itself. In the letter in which he explained to the London committee his reasons for not attending their final meeting, he said: "The report speaks almost as much in the name of the New South Wales and Van Dieman's Land Association as your own, and it is difficult in one or two places to make out which committee is meant when the word is used."²¹ In no less direct terms did he make his recom-

19. *Committees' Report*, p. iv.

20. Appearing in the *Argus*, 13th June 1870.

21. That letter was reprinted in the *Sydney Morning Herald* on 23rd May 1870, together with all the other documents relevant to the activities of the N.S.W. representation.

mendations to the colonists: "Begin your action at home, inform yourselves well, combine for mutual protection, act deliberately and you will succeed; but if you rely on aid from this side, you may expect much but will obtain little."²² These words were to form the creed of the woolgrowers but the mercantile community, seeing that they had conjured up a djinn over which their control was problematical, endeavoured to reduce their impact. They issued a report which, while directing attention to the more outstanding of the abuses, minimized the importance of the attitude of the London committees.

By August of that year, 1870, certain changes could be noted. Tentative inquiries about direct shipments had arrived from England and France;²³ new docks in London had forced a reduction in warehouse charges; above all, the importing merchants had been induced by competitive moves in Australia²⁴ to force the selling brokers to lower their commissions to $\frac{1}{2}$ per cent. Though these signs of improvement were received gratefully by the pastoralists neither they, nor the realization that over-production and not jobbery was the cause of falling prices, provided more than scant comfort as prices continued downward through the first six months of the year. So bleak did the outlook seem, in fact, that the importing merchants' association in London decided to cancel the increase in the number of sales and to hold only one in the second half of the year. Hardly had this been done than the Franco-Prussian War broke out, at once diminishing the competition from two of the major European consumers.

Throughout the entire 1870-1 season there was a continual undercurrent of discontent among the growers. It was a subdued murmur, however, as if it were realized that nothing of value could be achieved while the current European political situation lasted. Moreover, even the most voluble malcontents were pleased by the marvellous resilience shown by the market, for while predictions at the opening of the war had warned of dire times ahead, in fact the price fall was not nearly as great as expected.²⁵

The following season was ushered in amid more congenial omens. Prospects of renewed French and German competition were high. There was talk of the removal of the American tariff. Yet the movements initiated in and by the crisis years were continued. The Melbourne Chamber of Commerce, wishing to follow up its previous suggestion of liberalizing the constitution of the importers' association, found that it had to accept a *fait accompli*. The old Association, without warning anyone—above all the colonists who wanted their interests directly

22. *Ibid.*

23. See *Argus*, 17th August 1870.

24. *Argus* leader, 13th August 1870. See also Sir Daniel Cooper's letter to *The Times*, 16th March 1871.

25. See, for example, R. Goldsbrough's monthly circular in the *Journal of Commerce of Victoria*, 20th July 1871.

represented on any new organization—had wound up its affairs and had been replaced, slightly enlarged but otherwise unreformed, by the Colonial Wool Merchants' Association.²⁶

Meanwhile, the agitation among the growers had flared up again. The initiative was, by now, slipping quite definitely from the hands of the colonial merchants, for with the prospect of economic recovery their interest had diminished. Public meetings were held in the main Australasian cities from which memorials presenting the growers' claims were sent to the London Association. Their scope was admittedly smaller than it had been two years previously, but while some dealt with old subjects others embodied new complaints. The memorials called for an increase in the number of sales to six a year, for a further reduction in warehouse charges and for some alterations in the methods of sampling and lotting the wool for sale. To these was added, in strong terms, disapproval of selling brokers who acted as buying brokers at their own sales, a dual capacity which had aroused indignation when the London committee of inquiry had revealed its existence in 1870. A further technique for encouraging competition among the buyers, which had been mooted by the South Australian delegation in 1870 and which was unanimously advocated by these meetings, was the reduction of the unit in which bids could be made at the auctions. The final demand was for the abolition of the irritating but customary allowance of 1 lb. per cwt. to the buyer for "draft".

These memorials were turned over by the Colonial Wool Merchants' Association to a subcommittee for investigation. Its report²⁷ was more conciliatory than that of the 1870 committee had been. It formulated a careful defence of the existing practices in landing and weighing, sampling and lotting, and on the question of tare. The members frankly admitted that they were divided among themselves on the number of sales that should be held during the year, offering the difficulties of organization and the opposition of the buyers as the main reasons for their recommendation to give the five sales system a further trial. Negotiation, it promised, would be instituted or continued to effect a reduction in minimum bids and in warehouse charges. The uneasy position of the importers was reflected, however, in their reply on the problem of selling brokers serving two masters, a vacillating reply which was far from satisfying to the colonists. Their defence of the allowance of draft was spirited and involved, and they warned that any serious attempt to abolish it would lead to a "serious contest with the buyers" from which they obviously recoiled. Throughout the report

26. *Melbourne Chamber of Commerce*, Annual Report, 1871-2.

27. This, together with the minutes of evidence, was published in pamphlet form by the Colonial Wool Merchants' Association, London. It has been impossible to locate a copy of it other than that appearing in the *Argus*, 29th February 1872, which contains only those portions of the report "that it concerns the public to know".

ran the theme that was patently designed to quieten the colonists: "This," it would say, "is a matter which is best approached by giving explicit instructions to your consignee. Direct that he warehouse only in stores complying with such and such conditions; that he sell only through brokers who act in such a way and who conduct their sampling and lotting on such and such principles."

This advice appealed to the Melbourne Chamber of Commerce to which once more a copy of these proceedings was despatched.²⁸ Not that it was entirely taken in by so facile a solution or that it did not make some attempt to win back from the growers the initiative which the latter were beginning to wield somewhat hotheadedly. It did, however, accept the division between those customs which were sanctioned or regulated by the Association and therefore amenable to corrective action from it, and those which were matters of individual preference—which effectively narrowed the scope of discussion to the questions of draft and the frequency of sales. On both these matters the Melbourne Chamber was forthright. Of the periodic sales, indeed, it was led to wonder "whether this artificial arrangement is not in some respects unsuited to modern circumstances and whether the violent oscillations of the price of wool during the last two years . . . may not be reasonably attributed to some extent to the artificial restriction on the sale of the article"²⁹

The reception of the report at public meetings in other cities, on the other hand, was neither so calm nor so considered. A further memorial³⁰ was prepared at the request of the Sydney meeting and, by March, signed by 211 growers including some of the most influential in the four eastern colonies. This spared neither the arguments nor the prejudices of the London subcommittee. Accepting unreservedly only the findings on bidding, and reluctantly admitting pleasure that the cause for complaint over many technical problems had diminished, it took objection at the outset to the biased composition of the 1871 English subcommittee, feeling no doubt that Sir Daniel Cooper and prominent growers at the time in London should have been invited to participate. In round terms the pastoralists dissociated themselves from the fears and caution of their colonial agents and merchants. Their theme was: "Why should not the two parties enter into a 'serious contest'?" Their responses on other questions were delivered in terms no less blunt. In short, the growers, as distinct from the merchants in either Sydney or Melbourne, threw down an unambiguous challenge to those conducting the London sales: "We must not be prevented from

28. See the *Argus*, 27th March 1872, for the report of the meeting held to consider them.

29. *Ibid.*

30. Dated 26th March 1872, it was reprinted in the *Argus* on 23rd April 1872.

paying due regard to our own pecuniary interests by sentimental solicitude as to the feelings of our London agents.”

Nevertheless, even strong words were hardly sufficient to force the reforms which they desired. Not more than three or four of the buyers in the London saleroom signified their willingness to bid in farthings instead of halfpence when at length the importing merchants induced the selling brokers to accept such bids on some wools. The remainder of the three hundred greeted it with a “storm of dissent”.³¹ This led to revised opinions. When, by March 1873, the Melbourne Chamber had finally formulated its attitude to the London Association’s failure to achieve this and other desired reforms, many growers accepted its reiterated belief that the only way to act was through the agents.³² It shared, however, the London committee’s fear that the consequence of that course would be ignominious collapse, for it was foreseen that the complete unanimity of growers and agents that would be needed would be almost impossible to obtain. Though still expressing dissatisfaction about the degree of progress attained, a wearier note had entered the deliberations of this body. Since the spectacular rise during 1871-2 prices had, after all, been more satisfactory. The urgency of the pressures which had originally dictated mercantile participation in the agitation had been dissipated.

The initiative had, in fact, been firmly grasped by the wool-growers. In London a meeting of pastoralists resident there had sent a deputation to the importers’ committee to discuss the draft and the dual capacity of selling brokers. More significantly, a Pastoral Chamber of the Riverina had been formed specifically to mount permanent guard over the growers’ interests. The President of that body, W. A. Brodribb, was given a roving commission to investigate conditions in England on behalf of this organization.³³ The ground covered was that which had been traversed with such regularity since 1870. In one respect, however, he moved into new fields. He determined to explore, in some detail, the value of the alternatives offered by the Antwerp and Berlin markets towards which tentative moves had been made over the previous four years. Inquiry revealed that Berlin woolbrokers were willing to offer substantial concessions on their charges,³⁴ and having learnt that the savings to be effected in warehouse charges, from the allowance of actual tare only and from the non-allowance of draft, outweighed the extra costs of insurance and transport, Brodribb decided to send a trial consignment there in the following season. Though

31. *Argus*, 8th April 1872.

32. *Argus*, 19th April 1873.

33. W. A. Brodribb, *Recollections of an Australian Squatter*, Sydney, n.d., p. 182.

34. W. A. Brodribb, *Results of Investigations and Correspondence in Regard to the Wool Trade . . .*, Melbourne, 1875, p. 28. These were his reports to the Pastoral Chamber.

similar inquiries were directed to Antwerp, his search for alternative markets was not restricted to Europe, for even before his trip to England he had offered part of his clip for sale in Melbourne.³⁵

III

That latter action highlights one of the strange features of this whole period. While the agitation had, over a period of five years, resulted in a 35 per cent reduction in warehouse charges, had forced down the combined commission paid to consignees and brokers from 3½ per cent to 2 per cent, and had secured certain technical modifications in the saleroom, the attention of the merchants and the growers had been almost exclusively devoted to the London market, and no attempt had been made to develop the alternative markets close at hand in Sydney and Melbourne. Even stranger is the apparent reluctance, until 1872, of the local woolbrokers to exploit the unrest and dissatisfaction by drawing attention to their own facilities. Admittedly, T. S. Mort, the leading woolbroker of Sydney, had played a prominent role in the initial direction of the campaign in that city in 1869—though emphasizing that the interest was strictly that of a large wool producer³⁶—and had, at the opening of the 1869-70 season, issued a circular emphasizing the benefits to be derived from selling locally rather than consigning.³⁷ Nevertheless the quite substantial body of brokers in Sydney and Melbourne remained self-effacingly discreet until the three leading Melbourne houses announced, in August 1872, that they would sell without any allowance for draft.³⁸ This move, “in compliance with the written request made by the leading wool-growers”, was received with immediate protests from the buyers in the colonial market. Their acquiescence was secured only by a compensating variation in the customary tare allowance.³⁹ Nevertheless it left a recurring irritation between selling brokers and buyers which culminated in a buyers’ strike in November 1873, for the foreign buyers, in particular, resented being made the lever for the abolition of the allowance in London.⁴⁰ This, and an increased advocacy of the advantages of the local market in the 1872-3 and 1873-4 seasons, were the only moves made by the selling brokers. As reference to Table I will indicate, moreover, this silence was not engendered by any increased patronage of the local sales. On the contrary, the offerings on the Melbourne mar-

35. Brodribb, *Recollections* . . . , p. 188.

36. *Sydney Morning Herald*, 6th October 1869.

37. *Ibid.*, 15th September 1869.

38. See their advertisement inserted in the *Argus*, 28th August 1872.

39. See the monthly report of the London and Australian Agency Corporation Ltd., *Argus*, 10th October 1872; also the public notice published by the three brokers, *Argus*, 25th September 1872.

40. See, in particular, Jules Renard’s letter to the *Argus*, 12th November 1873.

ket declined both absolutely and as a proportion of total Victorian shipments during the crisis years.

TABLE I
Melbourne and Geelong Wool Auctions

| Year | Local Auctions ⁴¹ | | Total Exports from Victoria ⁴² Bales | Proportion of | | |
|---------|------------------------------|----------------|---|-----------------------|---------------------------|-------------------------|
| | Offerings Bales | Sales Bales | | Sales Exports % | Offerings Exports % | Sales Offerings % |
| 1866/7 | 102,062 | 47,534 | 175,216 | 27.1 | 58.2 | 46.5 |
| 1867/8 | 113,044 | 40,460 | 208,689 | 19.3 | 54.1 | 35.7 |
| 1868/9 | 72,822 | 36,850 | 217,936 | 16.9 | 33.4 | 50.6 |
| 1869/70 | 104,707 | 62,844 | 211,630 | 29.6 | 49.4 | 60.0 |
| 1870/1 | 72,344 | 50,696 | 224,346 | 22.5 | 32.2 | 70.0 |
| 1871/2 | 112,192 | 85,599 | 216,021 | 39.6 | 51.9 | 76.2 |
| 1872/3 | 110,317 | 69,287 | 231,581 | 29.9 | 47.6 | 62.8 |
| 1873/4 | 121,289 | 75,754 | 265,540 | 28.5 | 45.6 | 62.4 |
| 1874/5 | 149,950 | 107,885 | 303,880 | 35.5 | 49.3 | 71.9 |

The fact is that the colonial markets were not only vastly smaller than that in London, but they differed qualitatively. Only two or three of the buyers who operated in them in 1870 did so on foreign account or to manufacturer's order. The majority were essentially speculators buying either on their own account, or on that of English dealers, for resale in London. Moreover it was the small growers who appreciated most of the main advantage to be derived from the local sales—that of speedy realization and immediate settlement. Those few large squatters who patronized them did so on the specific condition that they retained the option of shipping to London if the price offered was unsatisfactory. The rule of thumb adopted was that they would offer locally when prices were high and stable while shipping direct to England when they were low or when a rising trend was discernible.⁴³ Consequently the fall in price between 1867 and 1871 drained away a substantial proportion of those large clips marketed in Melbourne in 1866-7-8. The circumstance which dictated the offer of small clips in that city led also to their sale virtually without reserve, and partially accounted for the increasing ratio of sales to offerings which the table illustrates.

41. Local sales and offerings have been estimated from the weekly reports of sales issued by the selling brokers and are subject to slight upward revision.

42. Estimated by R. Goldsbrough & Co. and published in the *Argus*, 24th February 1875.

43. Cf. R. Goldsbrough's letter to J. Badcock, Melbourne manager of the Bank of N.S.W., 5th May 1871, in the possession of the company. See also the Royal Commission on Railway Construction, *Report and Minutes of Evidence*, South Australian Parliamentary Papers, 1875, Vol. 2, paper 22, particularly question No. 658.

Though the figures are subject to a variety of influences, and their interpretation requires considerable caution, the steady upward trend in local offerings and sales, and particularly in the ratio of sales to offerings after 1870-1, is a reasonably clear sign of the progress and consolidation of the position of the local markets. It is, moreover, independent both of the discontent of the growers with the London system and of the belated efforts made by R. Goldsbrough & Co., Hastings, Cuningham & Co., and the London and Australian Agency Corporation Ltd. to exploit that discontent. The explanation of the trend which in fact represents the first sign of the coming thirty years' struggle between the colonial and the London markets, is to be found in developments which have only indirect relations with the events described in this paper. One was the granting of preferential rail freight rates by the Victorian Government which had the effect of extending the area from which the Melbourne brokers were able to draw their constituents.⁴⁴ Another was the rapidly changing composition of Victorian pastoral activity. In the three years 1865-7 the average number of sheep carried on what the Government Statistician denoted "stations" was 7,237,000 and, on properties not connected with stations, 1,453,000; by the period 1873-5 those figures were 5,691,000 and 5,345,000 respectively—indicating a larger number of smaller producers. Of greater importance, however, were the effective opening of direct cable communication with Britain late in 1872 and the arrival of a greater body of buyers purchasing directly for consumers in England, on the Continent and in the United States. Speedy communication meant that manufacturers could afford to establish their own representation in the colonies for, with it, the limits they set for their buyers still accurately reflected the English market situation on which they were based when they arrived in Australia, instead of being six weeks out of date as they had been previously. This accounted for the augmentation of European buyers in Australia. To these was added a contingent of buyers on American account—their number had been estimated at fifteen in 1871-2—who, following the lead of the Germans, were endeavouring to find a way of avoiding some of the expenses attendant of purchasing in London. The operation of buyers of this nature imparted a different character to the local markets. Prices, instead of being determined by what speculators considered a profitable margin below the London price, tended to approximate more closely that price less the transport differential. Indeed the American buyers found transport costs direct from Australia to the East Coast were only slightly more than those from London and their bidding, to the

44. Royal Commission on Railway Construction, *op. cit. passim*; Select Committee on the River Murray Traffic, *Report and Minutes of Evidence*, South Australian Parliamentary Papers, 1870-1, paper 86, particularly questions 34 and 400.

delight of the local brokers, reflected that realization. There were, of course, many more obstacles in the way of the development of these sales and it was many years before they lost their primarily speculative character, but the operation of these buyers did lift the level of the prices realized and therefore the popularity of the markets. That, rather than the actions of brokers or the discontent of growers, provides the explanation for the developments of this period.

IV

Though our knowledge is still far too fragmentary and uncertain to allow of dogmatic assertions, certain tentative conclusions may be drawn from this whole episode. It seems that the Anglo-Australian wool importers in London occupied a position in, and exerted an influence on, the trade far stronger than that allotted them by contemporary commercial theory. Their compact monopolistic character enabled them, collectively, broadly to control the flow of wool to the market and the practices and scales of charges adopted in London. Their large internal financial resources, backed by their connections with various sections of the English short-term money market, from which combination their restrictive power was largely derived, made them the fountainhead of the credit on which the whole trade was dependent. Short-term finance for the grower was provided, in the manner indicated above, by the exporting agent. He in turn obtained his more liquid funds by drawing upon an English importer, with whom he had more or less rigid connections.⁴⁵ Until alternate financial institutions were developed—until the colonial banking system provided widespread full-line credit from station to saleroom in the manner indicated by the Colonial Bank; until the local wool export agencies had attained financial independence; and until the local markets had developed to the stage where they could provide popular and effective alternatives to the London sales—until these alternatives were available the London importers were able to retain the dominance which their financial power gave them. The rigidities enforced by this short-term credit structure were buttressed by the form of long-term capital institutions which tended to bind growers more closely to particular export agents and to the London market. The limited and circumscribed outlook, the concentration on matters which were essentially minor and peripheral, and the rarity and ineffectiveness of radical suggestions in a movement which developed the incentive, the arguments and the organization to effect an entire transformation of the marketing structure, can be explained satisfactorily only by reference to these financial relationships and to the divergence of interests between the colonial

45. They ranged from the status of valued clients to that of colonial partners in a world-wide network, e.g. Dalgety's.

groups. By contrast, when in the 1890's the growers were faced with a far graver crisis, the technological state of the pastoral industry and, more importantly in the present context, the organization of the wool export trade had been so modified that the responses called forth differed significantly both in nature and success.

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NOTES

RECENT DEVELOPMENTS IN THE COUNCIL OF ECONOMIC ADVISERS*

The year 1955 may properly be regarded as marking the ten-year anniversary of our Employment Act here in the United States. To be sure, the statute itself (Public Law 304, 79th Congress) was not passed until February 1946, but throughout the year 1945 the proposal for such a law was being debated in and out of Congress, and two bills of very different character were wending their way through the Senate and the House of Representatives.

In the end, features of both bills were blended in a composite statute. The Senate bill's theory that a prospective employment or production "gap" could be reliably measured by available statistical techniques and prevented by compensating doses of Federal spending was muted but not deleted from the final act. From the House bill the major positive contribution was the idea of a high-level professional economists' group to make continuous study of the complex interplay of economic forces and events having significant impact on the prosperity of the country. Such a Council of Economic Advisers, established in the Executive Office of the President (created in 1939), was assigned the function of technical advice to the President and his Cabinet of department Secretaries (or ministers). The purpose was to shape an integrated economic policy to be presented to the Congress by the Executive Branch at the opening of its session each January. Thereafter, the Council's services were available in connection with special messages of the President, the signing or vetoing of economic legislation, or the preparation of Presidential speeches.

The introduction of this idea of a purely analytical or research staff "at the summit" of executive policy consideration had its counterpart as to the legislative branch of government. The original Senate bill had proposed a joint committee of both Houses to shape up an "economic budget." Under the Employment Act, a Joint Committee on the Economic Report of the President makes immediate and intensive study of the Economic Report and submits to the Congress its own critique and recommendations, together with supporting material. The Joint Committee's report has on several occasions split into majority and minority reports along straight party lines. Effort is made, however, to present a basic report that is accepted by all committee members, albeit with dissenting opinions or supplemental views attached. Sometimes these are signed by a single Senator or Representative; often by two or three jointly.

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But this annual view of the President's Economic Report does not constitute the sole or even the major activity of the Joint Economic Committee. It has, in practice, become a continuously active research or "pondering" committee. Equipped with a permanent staff of professionally trained economists and statisticians, it sets up numerous *ad hoc* subcommittees for the intensive study of salient economic problems, using public hearings, temporary or part time specialists from outside government, and much staff service from the various executive departments and independent commissions. Both the subcommittee reports and their hearings are issued in printed form.

Thus the essential character of the Employment Act finally passed by the Congress was not that of commitment to any specific theory or policy of how full employment can or should be maintained. It had become a broad methodological measure designed to promote the use of modern techniques of statistical measurement and economic analysis to detect internal strains in the economy at the earliest possible time and to suggest prompt and consistent measures toward the lessening of such strains and the promotion of sustained high-level use of our national economic resources.

Problems Encountered by the C.E.A.

Looked at in the present ten-year perspective, there seems ample evidence that the decision to set up a Council of Economic Advisers in the Executive Office of the President and a Joint Economic Committee in the Congress was well-conceived in the light of our traditions of free business enterprise and representative government. To be sure, many problems have arisen in defining the functions of the two new agencies and in getting each understood, accepted, and adequately used in its respective province. The Joint Committee got off to a slow start but has since got into its stride as a uniquely useful adjunct to Congressional procedure. The Council of Economic Advisers came to the verge of extinction at the age of six years, but has now been restored to a gratifying state of health and service in its appointed sphere.

One of the basic issues in the emergence of the Council into our frame of government, perhaps *the* crucial issue was to establish clearly the professional character of the agency and the advisory role of its members and to safeguard them against political involvement. The vice-chairman of the initial Council was a distinctly political appointee, and after he succeeded to the chairmanship his increasingly active participation in party affairs evoked much criticism both in and out of Congress. There were strong Congressional threats of abolishing the Council in 1952, ending in a compromise. The Council's operating funds were cut one-third, expiring explicitly in March 1953. This enabled it to continue in being until the new Administration could

decide on its own course—whether to allow the Council to lapse permanently, to request new funds to restore it to its original character, or to modify it in more or less drastic ways.

Mr. Eisenhower's decisions, though somewhat deferred in the rush of many claims on his time, were decisive and, from the present writer's view, most gratifying. He had, in the campaign, been accused of "having the military mind." Whatever that may connote in general, in this instance it seems to mean that he appreciates the value of staff work and knows how to select able staff specialists and to make effective use of their skills. He indicated at once that he realized that he would need the best intelligence service he could secure in the field of economic affairs. He tendered the post of chairman of the Council to Dr. Arthur F. Burns, a scholar of unquestioned prestige among economists and statisticians, then director of research for the National Bureau of Economic Research—an institution that for more than three decades had specialized in the study of the business cycle and the problems of economic stabilization.

To Dr. Burns the President entrusted not only the task of recruiting personnel for the Council and its staff but also of advising the Administration as to changes in administrative organization that seemed wise in the light of six years of actual operation. There was before the President at the time the recommendation of the (ex-President) Hoover Commission on Governmental Organization that the three-man Council be superseded by a single Economic Adviser to the President.

On June 1, 1953, President Eisenhower sent to the Congress Reorganization Plan No. 9, in which he recommended continuance of the three-man Council but with the chairman clearly designated as responsible administrative head. He was to exercise full authority in selecting staff and directing their work and to have full responsibility in reporting to the President on the activities of the Council. This does away with the anomalous "co-ordinate" relation of Council members that had plagued the Council in its early years. The position of vice-chairman was abolished, leaving "the members of the Council other than the Chairman in an equal status" and the President free to decide whom he wanted "to act as chairman of the Council on such occasions as necessity may arise therefor."

The other major change introduced by Reorganization Plan No. 9 consisted in putting an interdepartmental economic advisory board on a permanent and formal basis. There had been something similar on an *ad hoc* basis in connection with the last two Economic Reports of the President during my tenure of office (which terminated in November 1949). But "in order to make the work of the Council of Economic Advisers more effective at the top policy level of the executive branch" the President instructed the heads of the several depart-

ments and agencies, "or the representatives they may designate, to serve as an Advisory Board on Economic Growth and Stability, under the chairmanship of the chairman of the Council of Economic Advisers." In practice this board consists of the Under Secretaries of the Treasury, the departments of Commerce, Labour, and Agriculture, and such other agency heads as the chairman of the Council may call upon. This conference group may properly be said to be the heart of the Council's influence on economic thinking at the Cabinet level.

The President himself has also regularized a weekly conference with the chairman of the Council of Economic Advisers, to which he gives adequate time and close attention. The great importance he attaches to this staff arm of his office and his desire to bring it to maximum usefulness were expressed in his message to the Congress transmitting his plan for its reorganization. The President there said: "The legislative history of the Employment Act of 1946 makes it clear that it is the determination of the Congress to help develop a strong economy in the United States. . . . A strong economy means a free economy . . . an expanding economy . . . a humane economy . . . I believe in the basic principles of the Employment Act, and it is my purpose to take the appropriate actions to reinvigorate and make more effective the operations of the Council of Economic Advisers. Our needs for proper advice on economic matters are equalled only by our needs to have the best advice and planning on matters of national security. . . . The duties of the President require that he be fully informed of major economic trends and activities in order to recommend proper measures for the consideration of the Congress, and to take into account economic realities in seeing that the laws be faithfully executed."

President Eisenhower's intention "to reinvigorate and make more effective the work of the Council of Economic Advisers" has been consistently and rigorously carried out. All the members he has appointed have been of high professional standing, and they have kept almost entirely free of any activities that could reasonably be called "political." The Chairman of the Council is very chary of public appearances and refrains from press interviews, thus avoiding political involvement. Necessary contacts with political reality are facilitated by a friendly relationship between the Chairman of the Council and Dr. Gabriel Hauge, a member of the President's personal staff in the White House, and himself a trained economist. The Council has come to a position of important but unobtrusive usefulness throughout the executive establishment. It has regained public respect, and an appointment to any one of its three posts is regarded as a high honour and a great opportunity for public service by our best economists. Only two major issues seem to me to be still in need of resolution. They may be labelled as "anonymity" and "continuity."

Whose Economic Report?

In the first two annual economic reports and the first mid-year reports (now discontinued) the entire document was signed by the President, with only some technical statistical and methodological appendices attributable to the Council as such. In July 1948 Mr. Truman insisted that the major part of the document appear over the signatures of the Council members as *A Report: The Economic Situation at Mid-year by the Council of Economic Advisers*. I exerted every effort as chairman to have this "report" of the Council strictly limited to factual material, without policy conclusions or recommendations. Beginning with the Economic Report of January 1950 (under my successor) the Council document was given joint billing, on cover and title-page, with the President's policy recommendation as "*The Annual Economic Review by the Council of Economic Advisers*." It did not abstain from value judgments and, in its closing section freely expounded the Council's position on "Needed Policies." This practice was continued in the Economic Reports of 1951 and 1952. I see in it two threats to the most successful long-run functioning of the Council.

(a) As a practical matter, the presentation of a policy document over the signatures of Council members in the same state paper as that submitted by the President of the Congress creates a dilemma. Either these professional economists must present a brief for whatever policies the President and Cabinet recommend; or else they must argue for a different course (with perhaps different opinions among the members themselves). In fact, the latter situation developed in the final report of the Truman Council, when Vice-Chairman Clark inserted a "separate note" explaining why "I do not join in the analysis and policy discussion in Chapters III and IV." The Economic Report of the President is an official paper of the political chief of state. As such, "it is inevitable and entirely proper that it should blend political considerations with more rigorously economic ingredients in its formulation of practical policy. But there is no reason whatsoever why the Council should desire, or the President permit them, to present under their own names an economic analysis in the detail which clearly points to recommendations, and still less reason to include explicit recommendations of their own".¹

(b) As an issue of theory, there is no reason to suppose that economists are, by their technical training, equipped to render authoritative judgments on matters of over-all strategy or specific tactics for the economy in the face of the complex total situations that have to be met in a real world. If any line of academic training and research qualifies a man for that task, it should be that of the political scientist

1. E. G. Nourse: *Economics in the Public Service* (New York, Harcourt, Brace & Co., 1953), p. 399.

or student of public administration. To my mind, "there is an inherent inconsistency in having one who is ticketed as an *economic* adviser undertake to discuss the soundness of executive policy even on economic issues. To assume such a role implies that he is fully informed as to the extra-economic (or in a perfectly proper sense, political) considerations which the President and his Cabinet and White House aides have taken into account in arriving at the Administration position, and that it would be proper for him to reveal these political motivations and discuss them on their merits. But if the economist is not both informed as to the circumstances and convinced of the propriety and wisdom of these adaptations of strictly economic findings he cannot speak in public on policy matters without embarrassing the President or compromising himself."

The practice thus far followed by President Eisenhower and Dr. Burns tends to continue and confirm the precedent inaugurated by President Truman in 1948 (when he said it was not to establish a precedent) of making the Economic Report a Council document. In both years all that bears the President's signature has been a brief letter of transmittal to the Congress, giving its members "largely in the words of the Report itself, what I consider to be its highlights." It is not strange, in these circumstances, that commentators increasingly refer to the document as "the Council's Economic Report."

The arrangement has, to be sure, worked smoothly in these years when the views of President and economic adviser have conformed so closely. But it simply postpones the issue of what to do when a chairman of the Council of Economic Advisers sincerely believes the Administration is set on economically harmful courses. For him to resign in such a contingency (as has been suggested) would mean that the Executive Office would never have the advantage of a vigorous (but confidential) presentation of possible dangers or shortcomings of policies which might seem to them to be attractive. To have it understood that Council members would resign just because they could not endorse current White House policy would defeat a uniquely valuable purpose of having a professional staff in the economic sphere. (It was an entirely erroneous assumption that I myself resigned on such grounds.)

Continuity of Experience

Turning now to the issue of continuity of personnel, it is my view that the apparatus of economic advisorship needs primarily to be an adjunct of the office of the Presidency and only secondarily have ties to the personality of the particular President in office. The value of the Council's advice to an incoming President depends in no small measure on the member's familiarity with the process by which the policies of the preceding Administration were arrived at and, likewise,

on their having been during previous months or years engrossed in watching the trends in various parts of the economy and the impact of recently enacted laws or recent administrative policies. No newly appointed member of the Council, however eminent his attainments, can possibly have just this kind of intellectual momentum to bring to the consideration of the grave policy questions on which the new Administration will have to make early decisions as to the position it will take. Thus one, two, or three hold-over appointments would seem to be indicated—depending on the character of the current incumbents.

If any member was of dubious professional standing or had turned in an incompetent or partisan performance under the outgoing President, he should be promptly replaced on strictly professional considerations. It would be ideal if the incoming President had a trusted adviser with whom he had already worked in some economic connection and who could immediately be installed in the vacant position. Here he would be able promptly to acquaint his chief with intimate details of how the agency was operating and what steps might be considered for making it more useful to the new President. At the same time he could acquaint the Council members with their new chief's intellectual qualities and administrative attitudes. Thus both parties to the advisory relationship would most quickly and accurately find how or whether they could effectively work together and what other replacements should be made—and how soon. If, as is quite likely, the new President were to have an entirely new Council by the end of his first term of office, that would be something quite different from having President X dismiss President Y's Council on Inauguration Day and start to struggle with continuing economic problems with an advisory staff unfamiliar with the ways of governmental structures, the idiosyncracies of the incumbents of high Civil Service positions and the status of pending economic issues. It would rise above any such concept of professional advisorship as that Republican economists could not suitably serve a Democratic President.

In part, of course, the needs for continuity could be served by having the staff protected by their Civil Service status. But the staff can make their potentialities of service effective only "through channels"—which means through Council members and particularly the personal contact of their chairman with President and Cabinet officers. It takes some time for such Council-staff working arrangements to become established. And even the nominal protection to the continuity of staff personnel may be circumvented through devices well known to the initiated—such, for example, as changing the formal set-up of a service or denying funds to one which is not technically abolished. Thus, in the opening months of 1953 an almost complete break-up of the experienced staff of the Council was effected by those unfriendly to the Council by insisting that dismissal notices were sent out some

time before the funds would actually lapse. It will take some time for young economists and statisticians of promise to regain a feeling of confidence that this agency presents as secure a prospect of a professional career as do many other agencies in or out of Government.

The Joint Economic Committee

In contrast to the ups and down in the life of the Council of Economic Advisers, the Joint Committee on the Economic Report² which was set up in the Congress, has had a more steady trend of growth from rather limited beginnings to a broad and active programme of continuous work. It has taken seriously the mandate in the Act that it make a continuing study of matters relating to the Economics Report. It maintains a small professional staff which, by the co-operative skill of its directors and members and the latent authority of its Congressional position, can draw upon the rich resources of the varied personnel of the Executive departments and agencies outside the Government. It utilizes fully the characteristic device of a legislative body to hold extensive public hearings on the several phases of the Economic Report of the President (which is presented each year at the opening of the Congress) and on such timely topics as monetary policy, taxation reform, and the impact of automation. I have referred elsewhere³ to this as a unique type of Congressional committee, having no interest, affiliations or direct power over appropriations but devoted (so nearly as may be in this imperfect world) to the achievement of non-partisan intellectual leadership in the legislative plans of our Government. In a word, a "pondering" committee.

It is a fact worthy of note, perhaps even of surprise, that a committee of this politically unglamorous sort has been so attractive to members of the Congress in their choice of committee assignments. The present chairman of the committee is a past president of the American Economic Association; another member is a former college president; four have been prominent business or banking executives; one a candidate for Vice-President, and two were state judges. Half of the members are men of such party prominence and political seniority that they can command practically any committee post they desire.

Reverting to our theme of continuity of staff experience transcending political alignments, the career of Dr. Grover Ensley, Director of Staff for the Joint Committee, is encouraging. After serving as economist in the office of Republican Senator Flanders, he became staff director for the Joint Committee under the chairmanship of Democratic Senator O'Mahoney. He remained in that post under the chairmanship of Republican Representative Wolcott, and continued undisturbed after Democratic Senator Douglas became chairman.

2. Now generally referred to as the Joint Economic Committee.

3. *Op. cit.*, p. 427.

All in all, it is my personal belief that recent developments in perfecting administrative arrangements for carrying out the purposes of the Employment Act have gone far toward capturing the values inherent in that innovation in our government practices.

After ten years of designing, experimenting, and slightly revising the devices of a Council of Economic Advisers and a joint congressional committee on economic policy, these operating features of the Act seem to have earned widespread approval and confidence both in Government circles and outside. It seems safe to predict that they will not be abandoned, and there is no active move discernible to alter them in material ways.

In the nature of the case, the Council of Economic Advisers will be shaped as to its personnel and its pattern of operation by the personality of successive Presidents. They must learn how to use this staff arm most effectively. And no less must their successive appointees learn how to serve the Presidency most helpfully. This requires that its members and particularly its chairman remain faithful to the intellectual ideals of their profession, that they bring realistic knowledge of the business world to their desks, and that they adapt themselves to the changed atmosphere of a political environment without becoming politically involved.

Much has been learned from the experience in both the Executive Office and in the Congress during the first nine years of operation. Perhaps the greatest lesson has been the realization that such an intellectual approach to public affairs is a permanent need of a democratic system.

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PUBLIC CAPITAL FORMATION IN AUSTRALIA: 1919-20 to 1929-30

Although a great deal of discussion has taken place on the subject of Australian public capital formation in the 1920's, adequate estimates of the addition to the capital stock by public authorities in the period have not been made. Completed estimates for the years 1919-20—1929-30 are presented here in the hope that those interested in the period may find them useful as source material. Comments on the estimates are confined to some general explanation of the attached tables.

Three main periods of public capital formation stand out in Australian history. Of these, estimates have already been made for the first, the 'seventies, 'eighties and early 'nineties of the nineteenth century, and for the third, the years since the Second World War. Those for the post-1945 period appear in the annual Commonwealth

White Paper on National Income and Expenditure in the form of estimates of expenditure by public authorities on new works and maintenance. They are calculated in a way which bears similarities to that used here to arrive at public capital formation in the 1920's. The present estimate includes all the categories which make up the figures for "new works and maintenance" in the White Paper in addition to maintenance expenditures of public authority business undertakings, advances to settlers, Commonwealth Government expenditure on the erection of houses, purchases of land and buildings and expenditure on the construction of assets for defence purposes within Australia, all of which are specifically excluded from the definition used by the Commonwealth Bureau of Census and Statistics.

These differences arise from the basic concept of capital formation adopted in this paper. Public capital formation is taken to be the actual yearly expenditure by all public authorities on the extension and maintenance of the stock of durable assets. Capital formation is measured entirely on the basis of actual outlays for these purposes, no attempt being made to allow for changes in the value of public capital goods either because of price changes or because of change in ownership.¹

Essentially this procedure is the same as that adopted in estimates already made of public capital formation in the first of the three periods alluded to earlier.² The present estimates for the 1920's are, in general, directly comparable with those of Butlin and de Meel for the nineteenth century but the difference in period has meant that special problems of interpretation have arisen in the estimate for the 'twenties and some new categories of assets have been identified. The categories added are electricity, closer settlement, housing and a residual category for minor industrial undertakings. In addition, a sub-classification of public buildings has been made to establish a separate category of public buildings for purposes of education.

The reason for the separation of expenditure on capital equipment required for the generation and transmission of electricity hardly needs elaboration. The inclusion of a separate series of expenditure associated with the promotion of closer settlement of land, however, is less easy to justify. The items which comprise this category are expenditures on subdivision of blocks and other expenses directly

1. In the case of a few local government expenditures it has been found necessary to take annual changes in the value of assets to represent capital formation per year. Where this has happened there may be some revaluation included in the estimates.

2. N. G. Butlin and H. de Meel, *Public Capital Formation in Australia: Estimates 1860-1900* (Australian National University Social Science Monographs, Canberra, 1954). This differs from the procedure of Wilson, *Public and Private Investment in Australia* (Sydney), where estimates of public investment are confined to selected items of gross loan raisings and changing indebtedness of semi-governmental and local government bodies.

incurred by the State and Commonwealth Governments as well as advances made to settlers under both soldier settlement and closer settlement schemes. In the case of advances to settlers the State was neither responsible for the actual investment nor did it receive a return on it. This type of expenditure has been included since it has a special importance in the nineteen-twenties.

Expenditure on housing by the Commonwealth Government on the erection of dwellings under the War Service Homes Act which is involved here was too large to be included in a miscellaneous category.

The creation of a special category for industrial undertakings other than railways, telegraphs, water and sewerage and electricity, was prompted by the fact that such undertakings were large in number and that there has been some controversy on the question of their importance in the Australian economy in the 1920's. They include enterprises operated by the State with a view to some form of competition with private undertakings of a similar character and are, principally, saw-mills, stone quarries, butchers' establishments, sugar mills and coal mines. Local authority gasworks also appear here. Companies established by the Commonwealth to supply defence requirements are not included but appear under the heading of defence expenditure. Commonwealth Government subscriptions to the capital of Amalgamated Wireless of Australia have been classed as miscellaneous. Expenditure on the Commonwealth Shipping Line falls within this category.

The three types of public authority identified in these estimates are the Commonwealth Government, State governments and local governments. The only problem of classification on this score arises in the allocation of expenditure by semi-governmental authorities. In view of the many variations in the structure, social control and source of funds of these bodies, distinctions between them are necessarily of an arbitrary nature. In the main, local government expenditures refer to municipalities and most semi-governmental expenditures are included in the State government category. The criterion for such inclusion is that the authority concerned must have drawn on the loan fund of the relevant State government. Those that did not are counted as local authorities. Since financial procedure varied between States, total expenditures should be used for purposes of inter-state comparisons.

Outlays on assets in the Northern Territory have been included with Commonwealth Government expenditure. Expenditures in dependencies not on the mainland and on Commonwealth offices overseas have been completely omitted.

In addition to the adoption of a wider definition of capital formation and the presentation in terms of categories, the present estimates differ from the White Paper in that they try to differentiate between

new works and maintenance. Sceptics of this procedure are invited to content themselves with the estimates of gross capital formation. Nevertheless, the division is made here for the benefit of those who desire some information about the level of replacement expenditure and who do not require a high level of accuracy.

The availability of a large number of official financial statements which distinguish explicitly between repair and replacement, on the one hand, and new capital expenditure on the other has been taken as justification of this attempt. The procedure adopted has been to extract these actual maintenance expenditures from the relevant reports where they are available and where it is felt that the conceptual problems involved in the distinction are not too great. For the latter reason, all figures of expenditure on roads, bridges and harbours and on miscellaneous assets are presented as gross amounts. This has also been done in the case of expenditure on closer settlement and on the Commonwealth Shipping Line because the records of these do not provide a basis for any useful break-up. The quality of the local government statistics does not allow the distinction to be made for public buildings.

It has sometimes been necessary to take depreciation allowances to represent maintenance expenditure where no direct figures are available. This has occurred most frequently in the case of "other industrial undertakings." If neither maintenance expenditure figures nor depreciation allowances are available, as often happens in the case of local government expenditure, an estimate has been made on the basis of the value of the assets of the undertaking in existence. This type of estimate is important in the maintenance expenditure figures on electricity.

A detailed list of sources is appended to this paper. Here we do no more than provide a general outline of the nature of the sources and of the way in which they have been used. Whenever possible the Annual Reports of industrial undertakings have been used to extract the information relating to the undertakings. Where figures of new capital expenditure were not available, however, recourse was had to the Loan Fund Statement of the government concerned. This was the main source for other types of new capital formation. The third principal source was the Consolidated Revenue Fund Statement of each government. Maintenance expenditure estimates for categories other than industrial undertakings came almost entirely from this document and occasionally new capital formation estimates, particularly in the case of the Commonwealth. In addition some use was made of Trust Fund Statements. Estimates of local government expenditure were based on tables of expenditure by these authorities in the statistical collections of the relevant States. W. A. SINCLAIR

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TABLE I
Australia—Gross Capital Formation by Separate Categories: All Authorities, 1919/20-1929/30
 (£'000)

| Year | R'ways | Telegraph | Defence Const. | Water & Sewerage | Electricity | Other Ind. Undertakings | Public Buildings | | Housing | Roads | Closer Settlement | Misc. | Total |
|---------|--------|-----------|----------------|------------------|-------------|-------------------------|------------------|-------|---------|-------|-------------------|-------|--------|
| | | | | | | | Education | Other | | | | | |
| 1919/20 | 16675 | 1867 | 895 | 5801 | 1457 | 3063 | 1064 | 1446 | 4838 | 7675 | 13294 | 3807 | 61882 |
| 1920/21 | 19492 | 2660 | 1055 | 7337 | 2929 | 3851 | 1154 | 1626 | 7476 | 9627 | 18835 | 3492 | 79534 |
| 1921/22 | 23525 | 3318 | 1309 | 8538 | 4891 | 4125 | 1336 | 1581 | 2548 | 11270 | 10299 | 3830 | 76570 |
| 1922/23 | 23791 | 4118 | 381 | 9826 | 5818 | 2349 | 1418 | 1813 | 2158 | 11104 | 6797 | 2845 | 72418 |
| 1923/24 | 23774 | 5969 | 392 | 10525 | 5032 | 1415 | 1675 | 3151 | 2599 | 13110 | 7786 | 3224 | 78652 |
| 1924/25 | 26728 | 6562 | 559 | 10930 | 7143 | 1135 | 1949 | 3306 | 1823 | 16076 | 5972 | 2569 | 85752 |
| 1925/26 | 34050 | 7226 | 1727 | 9074 | 4952 | 1001 | 2014 | 3127 | 1169 | 18181 | 5342 | 3002 | 91465 |
| 1926/27 | 35365 | 6781 | 2830 | 9654 | 6507 | 791 | 2020 | 3208 | 1539 | 21219 | 5103 | 3461 | 98478 |
| 1927/28 | 34540 | 6528 | 2612 | 10317 | 7109 | 828 | 2221 | 3124 | 1646 | 23212 | 5869 | 3441 | 100947 |
| 1928/29 | 31737 | 6150 | 1780 | 10433 | 7182 | 376 | 1860 | 2921 | 1731 | 22889 | 3641 | 3608 | 94308 |
| 1929/30 | 26638 | 5931 | 656 | 9384 | 6853 | 294 | 1432 | 2855 | 1030 | 21339 | 3232 | 3057 | 82701 |

TABLE II
Australia—Capital Formation by Commonwealth Government, 1919/20-1929/30
 (£'000)

| Year | Railways | | Telegraph | | Defence Const. | | Public Buildings | | | Housing | | Total | | Other Ind. Undertakings | Roads Bridges Harbours | Closer Settlement | Misc. | Total G.C.F. |
|---------|----------------|-------|----------------|-------|----------------|-------|--------------------------|----------------------|-------------|----------------|-------|----------------|-------|-------------------------|------------------------|-------------------|-------|--------------|
| | New Cap. Form. | Mt'ce | New Cap. Form. | Mt'ce | New Cap. Form. | Mt'ce | Education New Cap. Form. | Other New Cap. Form. | Other Mt'ce | New Cap. Form. | Mt'ce | New Cap. Form. | Mt'ce |  |  |  |  |  | Gross | Gross |
| | | | | | | | | | | | | | | Gross | Gross | | | |
| 1919/20 | 151 | 213 | 936 | 931 | 844 | 51 | 262 | 254 | 80 | 4838 | 7285 | 1275 | 2354 | 67 | 7 | 322 | 11310 | |
| 1920/21 | 82 | 261 | 1520 | 1140 | 935 | 120 | 179 | 85 | 52 | 7476 | 10277 | 1573 | 3000 | 83 | 7 | 246 | 15186 | |
| 1921/22 | 91 | 241 | 2050 | 1268 | 1193 | 116 | 78 | 171 | 7 | 2548 | 6131 | 1632 | 3369 | 85 | — | 356 | 11573 | |
| 1922/23 | 90 | 241 | 2708 | 1410 | 278 | 103 | 12 | 293 | 71 | 2158 | 5539 | 1825 | 1815 | 29 | 11 | 555 | 9774 | |
| 1923/24 | 84 | 249 | 4417 | 1552 | 276 | 116 | 8 | 1043 | 73 | 2599 | 8427 | 1990 | 627 | 99 | 8 | 1130 | 12281 | |
| 1924/25 | 314 | 248 | 4779 | 1783 | 433 | 126 | 12 | 679 | 58 | 1823 | 8040 | 2215 | 163 | 184 | 4 | 564 | 11170 | |
| 1925/26 | 1213 | 278 | 5105 | 2121 | 1592 | 135 | 16 | 601 | 71 | 1169 | 9696 | 2605 | — | 87 | 187 | 187 | 12576 | |
| 1926/27 | 1919 | 210 | 4511 | 2270 | 2696 | 134 | 13 | 402 | 72 | 1539 | 11080 | 2686 | — | 43 | 6 | 161 | 13976 | |
| 1927/28 | 2419 | 246 | 4058 | 2470 | 2496 | 116 | 26 | 337 | 84 | 1646 | 10982 | 2916 | — | 41 | 1 | 312 | 14252 | |
| 1928/29 | 1554 | 266 | 3556 | 2594 | 1659 | 121 | 9 | 327 | 83 | 1731 | 8836 | 3064 | — | 44 | — | 682 | 12626 | |
| 1929/30 | 842 | 302 | 3175 | 2756 | 536 | 120 | 5 | 251 | 58 | 1030 | 5839 | 3236 | — | 124 | — | 519 | 9718 | |

TABLE III
Australia—Capital Formation by State Governments, 1919/20-1929/30

(£'000)

| Year | Railways | | Water & Sew. | | Electricity | | Other Ind. Undertakings | | Public Buildings | | | | Total | | Roads, Brs. & Harbours | | Closer Settlement | | Misc. | | Total G.C.F. |
|---------|----------------|-------|----------------|-------|----------------|-------|-------------------------|-------|------------------|-------|----------------|-------|----------------|-------|------------------------|-------|-------------------|-------|-------|-------|--------------|
| | New Cap. Form. | Mt'ce | New Cap. Form. | Mt'ce | New Cap. Form. | Mt'ce | New Cap. Form. | Mt'ce | Education | | Other | | New Cap. Form. | Mt'ce | Gross | Gross | Gross | Gross | Gross | Gross | |
| | | | | | | | | | New Cap. Form. | Mt'ce | New Cap. Form. | Mt'ce | | | | | | | | | |
| 1919/20 | 7197 | 9114 | 3717 | 490 | 347 | 18 | 342 | 247 | 498 | 304 | 313 | 214 | 12414 | 10387 | 2407 | 13287 | 3173 | 41668 | | | |
| 1920/21 | 8208 | 10941 | 5111 | 676 | 1336 | 58 | 433 | 301 | 591 | 384 | 484 | 243 | 16163 | 12603 | 3355 | 18828 | 2907 | 53856 | | | |
| 1921/22 | 10637 | 12556 | 6140 | 739 | 2945 | 160 | 383 | 342 | 929 | 329 | 381 | 226 | 21415 | 14352 | 4152 | 10299 | 3087 | 53305 | | | |
| 1922/23 | 10463 | 12997 | 6692 | 838 | 3602 | 322 | 155 | 342 | 1026 | 380 | 413 | 223 | 22351 | 15102 | 3545 | 6786 | 1866 | 49650 | | | |
| 1923/24 | 9952 | 13489 | 6721 | 927 | 2577 | 426 | 361 | 371 | 1202 | 465 | 547 | 266 | 21360 | 15944 | 4356 | 7778 | 1598 | 51036 | | | |
| 1924/25 | 11764 | 14402 | 7032 | 924 | 4434 | 635 | 625 | 298 | 1423 | 514 | 830 | 293 | 26108 | 17066 | 5193 | 5968 | 2442 | 56777 | | | |
| 1925/26 | 14608 | 18551 | 5121 | 877 | 1778 | 725 | 652 | 310 | 1456 | 542 | 802 | 316 | 24417 | 21321 | 5659 | 5341 | 2168 | 58906 | | | |
| 1926/27 | 15086 | 18150 | 5341 | 966 | 2409 | 838 | 467 | 281 | 1455 | 552 | 855 | 292 | 25643 | 21079 | 7191 | 5097 | 2532 | 61542 | | | |
| 1927/28 | 15193 | 16682 | 5313 | 1096 | 2207 | 932 | 489 | 297 | 1594 | 601 | 924 | 298 | 25920 | 19906 | 8285 | 5368 | 2309 | 61788 | | | |
| 1928/29 | 12860 | 17057 | 5008 | 1003 | 1939 | 1055 | 49 | 266 | 1253 | 598 | 1082 | 353 | 22191 | 20332 | 8369 | 3641 | 2087 | 56620 | | | |
| 1929/30 | 8524 | 16970 | 4301 | 971 | 1941 | 1152 | 21 | 218 | 913 | 514 | 1003 | 310 | 16703 | 20135 | 6855 | 3232 | 1725 | 48650 | | | |

TABLE IV

Australia—Capital Formation by Local Government Authorities, 1919/20-1929/30

(£'000)

| Year | Water & Sew. | | Electricity | | Other In. Und. | | Total | | | | Rds. Brs. & Harb. | | Public Bldg. (other) | | Misc. | | Total G.C.F. |
|---------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|----------------|-------|-------------------|-------|----------------------|-------|-------|-------|--------------|
| | New Cap. Form. | Mt'ce | Gross | Gross | Gross | Gross | Gross | Gross | |
| | | | | | | | | | | | | | | | | | |
| 1919/20 | 1359 | 235 | 954 | 138 | 107 | 13 | 2420 | 386 | 5201 | 585 | 312 | 8904 | | | | | |
| 1920/21 | 1269 | 281 | 1367 | 168 | 103 | 14 | 2739 | 463 | 6189 | 762 | 339 | 10492 | | | | | |
| 1921/22 | 1346 | 313 | 1594 | 192 | 17 | 14 | 2957 | 519 | 7033 | 796 | 387 | 11692 | | | | | |
| 1922/23 | 1929 | 367 | 1660 | 234 | 23 | 14 | 3612 | 615 | 7530 | 813 | 424 | 12994 | | | | | |
| 1923/24 | 2417 | 460 | 1748 | 281 | 42 | 14 | 4007 | 755 | 8655 | 1222 | 496 | 15335 | | | | | |
| 1924/25 | 2416 | 558 | 1741 | 333 | 34 | 15 | 4191 | 906 | 10699 | 1446 | 563 | 17805 | | | | | |
| 1925/26 | 2418 | 638 | 2057 | 392 | 24 | 15 | 4499 | 1065 | 12435 | 1337 | 647 | 19983 | | | | | |
| 1926/27 | 2564 | 783 | 2744 | 516 | 27 | 16 | 5335 | 1315 | 13985 | 1557 | 768 | 22960 | | | | | |
| 1927/28 | 2802 | 906 | 3293 | 677 | 25 | 17 | 6120 | 1600 | 14886 | 1481 | 820 | 24907 | | | | | |
| 1928/29 | 3406 | 1016 | 3393 | 795 | 42 | 19 | 6841 | 1830 | 14476 | 1076 | 839 | 25062 | | | | | |
| 1929/30 | 2954 | 1158 | 2891 | 869 | 35 | 20 | 5880 | 2047 | 14360 | 1233 | 813 | 24333 | | | | | |

TABLE V

Australia—Gross Capital Formation All Authorities, 1919/20-1929/30
(£'000)

| | N.S.W. | Q'land | S. Aus. | Tas. | Vic. | W. Aus. | C/W G.C.F. | Total |
|---------|--------|--------|---------|------|-------|---------|------------|--------|
| 1919/20 | 17928 | 8583 | 4870 | 2456 | 12857 | 3878 | 11310 | 61882 |
| 1920/21 | 25211 | 8265 | 5429 | 3907 | 17383 | 4153 | 15186 | 79534 |
| 1921/22 | 24867 | 7240 | 5665 | 3573 | 19605 | 4047 | 11573 | 76570 |
| 1922/23 | 22861 | 8858 | 6194 | 2247 | 17804 | 4680 | 9774 | 72418 |
| 1923/24 | 22093 | 10595 | 7431 | 2382 | 18521 | 5349 | 12281 | 78652 |
| 1924/25 | 25195 | 10661 | 8664 | 2729 | 21658 | 5675 | 11170 | 85752 |
| 1925/26 | 25756 | 12182 | 12921 | 2147 | 20032 | 5851 | 12576 | 91465 |
| 1926/27 | 29721 | 11904 | 12706 | 2348 | 21645 | 6178 | 13976 | 98478 |
| 1927/28 | 34300 | 11096 | 8766 | 2740 | 23045 | 6748 | 14252 | 100947 |
| 1928/29 | 35044 | 10146 | 7198 | 2237 | 20769 | 6288 | 12626 | 94308 |
| 1929/30 | 29778 | 9397 | 6470 | 2332 | 19307 | 5699 | 9718 | 82701 |

TABLE VI

Australia—Gross Capital Formation by State Governments, 1919/20-1929/30
(£'000)

| | N.S.W. | Q'land | S. Aus. | Tas. | Vic. | W. Aus. | Total |
|---------|--------|--------|---------|------|-------|---------|-------|
| 1919/20 | 14666 | 7001 | 4321 | 1835 | 10208 | 3637 | 41668 |
| 1920/21 | 21101 | 6188 | 4764 | 3309 | 14665 | 3829 | 53856 |
| 1921/22 | 20218 | 5070 | 4910 | 2910 | 16527 | 3670 | 53305 |
| 1922/23 | 17967 | 6346 | 5339 | 1520 | 14215 | 4263 | 49650 |
| 1923/24 | 16681 | 7288 | 6529 | 1640 | 14035 | 4863 | 51036 |
| 1924/25 | 19144 | 6762 | 7622 | 1967 | 16174 | 5108 | 56777 |
| 1925/26 | 18671 | 8177 | 11696 | 1327 | 13816 | 5219 | 58906 |
| 1926/27 | 21133 | 7349 | 11307 | 1355 | 14965 | 5433 | 61542 |
| 1927/28 | 24627 | 6408 | 7212 | 1736 | 16008 | 5797 | 61788 |
| 1928/29 | 24781 | 6186 | 5786 | 1282 | 13525 | 5060 | 56620 |
| 1929/30 | 19532 | 5378 | 5087 | 1402 | 12878 | 4373 | 48650 |

TABLE VII

Australia—Gross Capital Formation by Local Government Authorities, 1919/20-1929/30
(£'000)

| | N.S.W. | Q'land | S. Aus. | Tas. | Vic. | W. Aus. | Total-G.C.F. |
|---------|--------|--------|---------|------|------|---------|--------------|
| 1919/20 | 3262 | 1582 | 549 | 621 | 2649 | 241 | 8904 |
| 1920/21 | 4110 | 2077 | 665 | 598 | 2718 | 324 | 10492 |
| 1921/22 | 4649 | 2170 | 755 | 663 | 3078 | 377 | 11692 |
| 1922/23 | 4894 | 2512 | 855 | 727 | 3589 | 417 | 12994 |
| 1923/24 | 5412 | 3307 | 902 | 742 | 4486 | 486 | 15335 |
| 1924/25 | 6051 | 3899 | 1042 | 762 | 5484 | 567 | 17805 |
| 1925/26 | 7085 | 4005 | 1225 | 820 | 6216 | 632 | 19983 |
| 1926/27 | 8588 | 4555 | 1399 | 993 | 6680 | 745 | 22960 |
| 1927/28 | 9673 | 4688 | 1554 | 1004 | 7037 | 951 | 24907 |
| 1928/29 | 10263 | 3960 | 1412 | 955 | 7244 | 1228 | 25062 |
| 1929/30 | 10246 | 4019 | 1383 | 930 | 6429 | 1326 | 24333 |

SOURCES³1. *Railways*(a) *Commonwealth*

Statement of Receipts and Expenditure of the Port Augusta-Oodnadatta Railway.

(b) *States*

Loan Fund Statements.

Annual Reports of Railway Commissioners.

2. *Telegraphs*

Annual Report of the Post-Master-General's Department.

3. *Water and Sewerage*⁴(a) *New South Wales*

Annual Report of the Metropolitan Board of Water Supply and Sewerage.

Annual Report of the Hunter District Water Supply and Sewerage Board.

Statements of Receipts and Expenditure of the Irrigation Areas.

Municipalities—Sewerage Special or Local Fund:

Balance Sheet and Revenue Account.

Municipalities—Water Supply Special or Local Fund:

Balance Sheet and Revenue Account.

Shires—Sewerage Special or Local Fund: Balance Sheet and Revenue Account.

Shires—Water Supply Special or Local Fund; Balance Sheet and Revenue Account.

(b) *Queensland*

Annual Report of the Metropolitan Board of Water Supply and Sewerage Board, Brisbane.

Annual Report of the Irrigation and Water Supply Commission.

Return of Receipts and Expenditure, Assets and Liabilities of Waterworks.

Statement of Receipts and Expenditure of the Metropolitan Water Supply.

Statement of Receipts and Expenditure of the Metropolitan Sewerage.

(c) *South Australia*

Annual Report of the Public Works Department.

(d) *Tasmania*

Statement of Loans by the State to Local Bodies.

Return of Waterworks.

3. Unless otherwise indicated, serial sources exist throughout 1919/20-1929/30.

4. Wherever possible new capital expenditure has been extracted from the above reports rather than from the financial statements of the State Governments. All maintenance expenditures came from these reports except where they had to be estimated.

Statement of Local Bodies' Loans.
Return of Water Trusts.

(e) *Victoria*

Annual Report of the State Rivers and Water Supply Commission.

Statement of Capital Expenditure of the Melbourne and Metropolitan Board of Works.

Statement of Capital Expenditure of the Geelong Waterworks and Sewerage Trust.

Statement of the Capital Expenditure of the Bendigo Sewerage Authority.

Statement of the Capital Expenditure of the Ballarat Water Commission.

Statement of the Capital Expenditure of the Ballarat Sewerage Authority.

Municipalities—Statement of Assets and Liabilities.

(f) *Western Australia*

Annual Report of the Metropolitan Water Supply, Sewerage and Drainage.

4. *Electricity*

(a) *New South Wales*

The Auditor-General's Report on State Industrial Undertakings.

City of Sydney Electricity Works Fund: Balance Sheet and Net Revenue Account 1919-1928.

City of Sydney Summary of Assets and Liabilities 1929-30.

Municipalities and Shires—Electricity Works Trading Undertakings: Balance Sheet and Revenue Account.

(b) *Queensland*

Annual Report of the Irrigation and Water Supply Commission.

Return of Receipts and Expenditure of Local Authorities which are Electrical Authorities.

(c) *South Australia*

Return of Revenue and Expenditure of Corporations and District Councils.

(d) *Tasmania*

Loan Fund Statement.

Annual Report of the Hydro-Electric Department.

Statement of Loans by the State to Local Bodies.

Statement of Local Bodies' Loans.

(e) *Victoria*

Loan Fund Statement.

Municipalities—Statement of Assets and Liabilities.

(f) *Western Australia*

Annual Report of the Department of Public Works and Trading Concerns.

5. *Other Industrial Undertakings*

(a) *New South Wales*

The Auditor-General's Report on State Industrial Undertakings.

Loan Fund Statement.

Gasworks Trading Undertakings: Balance Sheet and Revenue Account.

(b) *Queensland*

Annual Report of the Commissioner of the State Trade Department.

Annual Report on Government Central Sugar Mills.

Loan Fund Statement.

(c) *Tasmania*

Annual Report of the Public Works Department.

Loan Fund Statement.

(d) *Victoria*

The Auditor-General's Report on Government Business Undertakings.

Municipalities—Statement of Assets and Liabilities.

(e) *Western Australia*

Loan Fund Statement.

Annual Report of the Department of Public Works and Trading Concerns.

(f) *Commonwealth*

Statement of Receipts and Expenditure of the Commonwealth Shipping Line.

6. *Roads, Bridges and Harbours*

The main sources were Consolidated Revenue Fund Statements, Loan Fund Statements and Trust Fund Statements. In addition the following sources of local expenditure were used:

(a) *New South Wales*

City of Sydney City Fund: Revenue Account.

Municipalities and Shires—Special and Local Funds.

Municipalities and Shires—General Fund.

(b) *Queensland*

Statement of Expenditure of Cities, Towns and Shires.

(c) *South Australia*

Return of Revenue and Expenditure of Corporations and District Councils.

(d) *Tasmania*

Statement of Loans by the State to Local Bodies.

Statement of Local Bodies' Loans.

Summary of Municipal Receipts and Expenditure.

Marine Boards and Harbour Trusts: Revenue Account.

(e) *Victoria*

Municipalities—Statement of Revenue and Expenditure.

City of Melbourne—Statement of Revenue and Expenditure.

Melbourne Harbour Trust—Statement of Receipts and Expenditure.

Geelong Harbour Trust—Statement of Receipts and Expenditure.

(f) *Western Australia*

Municipalities—Statement of Revenue and Expenditure.

Road Districts—Statement of Receipts and Expenditure.

7. *Defence Construction*

Commonwealth Consolidated Revenue Fund.

Commonwealth Loan Fund.

8. *Public Buildings: Education*

(a) *Commonwealth*

Trust Fund Australian Soldiers' Repatriation Account.

(b) *States*

Consolidated Revenue Fund Statements.

Loan Fund Statement.

9. *Public Buildings: Other*

For the Commonwealth and State Governments the sources were the Consolidated Revenue Fund Statements and the Loan Fund Statement. The sources for local expenditure were as follows:

(a) *New South Wales*

City of Sydney City Fund: Revenue Account, 1919-1928.

City of Sydney: Summary of Liabilities and Assets.

Municipalities—Loan Fund.

Municipalities and Shires—General Fund.

(b) *Queensland*

Statement of Expenditure of Cities, Towns and Shires.

Return of Assets of Cities, Towns and Shires.

(c) *South Australia*

Return of Revenue and Expenditure of Corporations and District Councils.

(d) *Tasmania*

Statement of Loans by the State to Local Bodies.

Statement of Local Bodies' Loans.

Return of Revenue and Expenditure of Cemetery Trusts.

(e) *Victoria*

Municipalities—Statement of Revenue and Expenditure and Assets and Liabilities.

City of Melbourne—Statement of Revenue and Expenditure.

(f) *Western Australia*

Municipalities—Statement of Revenue and Expenditure and Assets and Liabilities.

10. *Closer Settlement*(a) *New South Wales*

Closer Settlement Account.

(b) *Queensland*

Loan Fund Statement.

(c) *South Australia*

Loan Fund Statement.

(d) *Tasmania*

Loan Fund Statement.

(e) *Victoria*

Annual Report of the Closer Settlement Board of Victoria.

(f) *Western Australia*

Loan Fund Statement.

(g) *Commonwealth*

Soldier Settlement Fund of the Commonwealth.

11. *Housing*

Commonwealth Trust Fund War Service Homes Account.

12. *Miscellaneous*

In addition to the Consolidated Revenue Fund Statements and Loan Fund Statements of Commonwealth and State Governments, the following sources were used:

(a) *New South Wales*

City of Sydney City Fund: Revenue Account.
Municipalities and Shires—Special and Local Funds.
Municipalities and Shires—General Fund.

(b) *Queensland*

Annual Report of the Prickly Pear Commission.
Statement of Expenditure of Cities, Towns and Shires.

(c) *South Australia*

Return of Revenue and Expenditure of Corporations and District Councils.

(d) *Tasmania*

Statement of Loans by the State to Local Bodies.
Statement of Local Bodies' Loans.
Summary of Municipal Receipts and Expenditure.

(e) *Victoria*

Municipalities—Statement of Revenue and Expenditure.
City of Melbourne—Statement of Revenue and Expenditure.

(f) *Western Australia*

Municipalities—Statement of Revenue and Expenditure.

THE INELASTICITY OF SUPPLY OF WOOL

That the supply of wool is highly inelastic has long been recognized. Apart from its general effect of accentuating price fluctuations induced by changes in demand conditions, this phenomenon has a particular importance for the Australian economy. Mrs. Robinson, for instance, has emphasized that the steadiness of the output of wool contributed significantly to the benefit this country derived from depreciation in 1931.¹ Likewise, in the discussions of the case for a protective tariff, writers rightly have pointed to the inelastic supply of export production as one of the conditions conducive to maximizing benefits or minimizing losses from the operation of the tariff.² It is clear from the facts of the situation, if not from the discussion, that the pastoral industry was a major point of reference.

On the other hand, the factors which actually cause wool production to be so unresponsive to price movements in the short run have not been outlined at all adequately. The purpose of this note is to point out several factors bearing on the inelasticity of Australian wool production which appear to have eluded earlier writers.

Dr. Gerda Blau, in her classic paper, enumerated four factors affecting the supply of this commodity.³ These were (1) the lack of alternative uses for resources (particularly land) used in wool production; (2) the condition of joint production with meat, which is more important for crossbred wool than for merino; (3) the length of the production period, and (4) the rigid nature and relative importance of overhead costs.

In the supplement to Blau's paper, sponsored by the International Wool Secretariat, Berry has traversed the same ground but has elaborated Blau's first point with reference to migration of labour to and from non-rural employment.⁴ He claims that the lack of urban industrial development in association with the extensive form of pastoral occupation (coupled with the predominant position of the family in the work force) is conducive to limited migration of labour. Australia, with its industry far from decentralized, would appear to fit Mr.

1. Joan Robinson, *Essays in the Theory of Employment* (2nd ed., Oxford: Basil Blackwell, 1947), p. 146.

2. See, for example, D. B. Copland, "Notes on Tariff Theory with Special Reference to the Australian Tariff", *Economic Record*, Vol. XI, Supplement (March 1935), p. 33.

3. Gerda Blau, "Wool in the World Economy", *Journal of the Royal Statistical Society*, Vol. CIX, Part III (1946), pp. 190-3; also United Nations Food and Agriculture Organization, *World Fiber Survey* (Washington, 1947), pp. 88-92. Substantially the same explanations of the inelasticity of supply are given by R. B. McMillan, "Organised Marketing of Wool", *Economic Record*, Vol. XXV Supplement (August 1949), pp. 60-2, and P. Nettl, "Some Economic Aspects of the Wool Trade", *Oxford Economic Papers*, Vol. 4, No. 2 (July 1952), pp. 180-1.

4. D. Berry, *Wool in the World Economy, 1946-51* (London: The International Wool Secretariat, 1952), pp. 16-17.

Berry's conditions perfectly. But there seems little evidence to suggest that immobility of labour is peculiarly characteristic of the pastoral industry or, for that matter, that it has ever proved to be the brake on economic development in the Australian scene that it has been in other countries.

With the assertion that the long production period in sheep-raising greatly complicates production decisions there can be no quarrel.⁵ The nature of costs and the limited alternative production possibilities are also vital clues to the explanation of the inelasticity of supply. But the analysis needs to be carried further, at least so far as Australian experience is concerned.

Take first the question of costs. Recent cost data simply serve to confirm the Australian cost evidence adduced by Dr. Blau in support of her contention that overhead costs represent a high proportion of total costs in sheep-farming.⁶ Speaking generally, and subject to the usual reservations attaching to agricultural cost estimates, the recent figures for eastern Australia point towards a distribution of aggregate costs of the following order: cost of production requisites, up to 15 per cent; wages (excluding shearers' allowances), 10 to 15 per cent; shearing expenses 10 to 15 per cent on inland properties, 5 to 8 per cent on tableland properties; maintenance and depreciation on plant and improvements, 10 to 15 per cent; rates and insurance, 3 to 4 per cent; operator's allowance (imputed), 7 to 20 per cent; interest on investment (imputed), 23 to 30 per cent.⁷

A grazing firm, having variable costs so small a proportion of total costs, provides a perfect textbook example of the case where an entrepreneur can maintain production in the face of a drastic fall in price. Moreover, the resources used in pastoral production, particularly the land itself, offer unparalleled opportunities for a flexible policy of investment and disinvestment over time.

Having stressed the importance of fixed (overhead) costs in wool-growing, some writers proceed to describe the costs of the corresponding resource services as "rigid" or "inflexible".⁸ In so doing, they have overlooked one important clue as to the lack of supply response in the wool industry, namely the flexibility of factor prices. This flexi-

5. Berry, rightly, is also inclined to give some weight to the uncertainty attaching to price expectations, especially so far as this is aggravated by the long period of production.

6. For a review of recent cost estimates see Keith O. Campbell, "Australian Wool Supply Prospects", *Economic Papers No. 10* (Sydney: The Economic Society of Australia and New Zealand, 1955), pp. 42-8.

7. *Ibid.*, p. 48.

8. Blau, *op. cit.*, p. 191; Berry, *op. cit.*, p. 13; Nettl, *op. cit.*, p. 180. Some governmental reports, especially those oriented towards depression conditions, also stress the inflexibility of wool costs. This theme is, for instance, constantly reiterated in the *Report of the Wool Advisory Commission Appointed to Enquire into the Economic Condition of the Wool Industry in Queensland* (1939).

bility in large part reflects the inelasticity of the supply of resources used in the industry.

The relevance of the supply conditions of factors to the explanation of supply responses in agriculture was first pointed out by Johnson.⁹ His discussion was primarily concerned with the response of the aggregate agricultural industry in recession and inflation. The problem here essentially is to develop an explanation of the inelastic aggregate supply function of agriculture compatible with shifts between individual products as relative prices change. Johnson's basic argument is, however, equally applicable to a single constituent industry, especially if, as in Australian sheep-farming, alternative production opportunities are circumscribed.

To the extent that the prices of factors of production used in wool-growing are as flexible as wool prices themselves, the rational grazier is unlikely to reduce the rate of input of the resources in question in the face of a decline in wool prices.¹⁰ Given a widespread tendency for costs to fall commensurately with declining revenue, the grazier may find his most profitable level of output very nearly coincides with that which prevailed before the decline in wool prices. Flexibility of factor prices equally well explains the failure of wool production to expand under the stimulus of rising prices.¹¹

The most important set of resources having short-run flexible prices are those furnished by the farm family.¹² These comprise typically, the operator's labour services and those of his family, together with the land and capital assets which he owns. In the compilation of cost figures, the rewards to these factors are usually imputed, and their relative significance in recent times is typically understated. In actual fact, the payments for such services represent residual claims on income. Alternative opportunities for employment of these factors being circumscribed, especially in a period of depression, payments for services are as flexible as commodity prices. Under current conditions, these costs make up about two-thirds of the aggregate costs of wool-growing. In Australia, of course, a high proportion of grazing land is held under lease from the Government, but rentals appear to be flexible, particularly in the downward direction.

9. D. Gale Johnson, "The Nature of the Supply Function for Agricultural Products", *American Economic Review*, Vol. XL, No. 4 (Sept. 1950), pp. 539-64.

10. It is, of course, conceivable that differential flexibility in factor prices might open up possibilities of factor substitution, causing the inputs of a factor, the price of which is very flexible, to be increased.

11. It is wrong to infer (as some writers on the Australian tariff appear to have done) that the failure of output to respond to price changes necessarily means that marginal cost curves of firms in the industry are steeply rising, e.g. D. B. Copland, "A Note on Tariff Theory", *Economic Record*, Vol. X, No. 18 (June 1934), p. 87.

12. For a more detailed examination of the nature of supply functions of factors used in wool-growing, see Campbell, *op. cit.*, pp. 51-4.

Other farm-furnished resources also tend to have highly inelastic supply functions. This applies especially to sheep which may be purchased as replacements on dry-sheep properties. Agricultural wages also demonstrate a considerable degree of flexibility. This is usually explained in terms of an inelastic supply function, reflecting in particular the lack of alternative employment opportunities in time of depression. However, in the Australian pastoral industry, where minimum wages are determined by compulsory arbitration and accordingly other factors perforce operate, rates (especially those for casual employees such as shearers) are still quite flexible (see Table I). In 1949, special loadings (known as wool value allowances) were by consent introduced into the pastoral award, thus giving overt recognition to the fact that graziers were paying more than award rates. These wool value allowances are related by a formula to the prevailing price of wool.

Detailed indexes of the prices of such goods and services, used in wool production in Australia, as are recorded by the Statistician are also reproduced in Table I. Table II contains similar price indexes for New Zealand, another important supplier of raw wool. In general, the cost information available from that country serves to confirm the general thesis presented above.

The prices of production materials, as might be expected, show the least correlation with wool prices and hence the greatest rigidity. However, the prices of some of the commodities, which are locally produced, appear to be fairly sensitive to general inflationary and deflationary movements in the national economy, movements which are attributable, at least in part, to changes in wool values. The greater rigidity of cost items of non-rural origin is, however, not likely to influence greatly the course of wool production because (1) such costs represent a small proportion of aggregate costs and (2) some of the items like sheep dip are in the nature of fixed coefficients of production.

In summary, the nature of the supply functions of the principal factors used in wool production is such that production tends to be little affected in the short run, either by a rise or a fall in the price of wool. As was indicated earlier, this set of circumstances assumes importance because possibilities of shifts into alternative lines of production (enterprises) are limited in Australian agriculture.

Two reasons are usually given for the limited amount of transference that takes place between woolgrowing and other enterprises. The first is the fact that a certain proportion of the wool clip (especially the merino clip) is derived from properties in the semi-arid interior, where environmental conditions prohibit any alternative land use. Somewhat similar limitations might also apply to parts of the tablelands.

TABLE I

Index Numbers of Wool Prices and Costs—Australia

(Base: Average 1937/8 and 1938/9 = 100)

| Year | Average Price Greasy Wool | Shearers' Allowance | Station Hands' Wage | Price Prime Merino Ewes | Wool Rahl Freight (500ml.) | Wholesale Prices (Basic Materials) | Price Fencing Wire | Price Barbed Wire | Price Wool-packs | Price Super-phosphate | Price Sheep-dip | Price Kero-sene | Price Cement | Price Hard-wood |
|---------|---------------------------|---------------------|---------------------|-------------------------|----------------------------|------------------------------------|--------------------|-------------------|------------------|-----------------------|-----------------|-----------------|--------------|-----------------|
| 1924/25 | 222 | 108 | 116 | 204 | 114 | — | 103 | 103 | 185 | 141 | 106 | 98 | 127 | 111 |
| 1925/26 | 144 | 108 | 116 | 148 | 114 | — | 103 | 101 | 195 | 146 | 106 | 96 | 127 | 100 |
| 1926/27 | 148 | 114 | 122 | 108 | 114 | — | 104 | 102 | 169 | 154 | 106 | 100 | 124 | 111 |
| 1927/28 | 170 | 116 | 122 | 148 | 114 | — | 104 | 103 | 156 | 159 | 106 | 103 | 120 | 114 |
| 1928/29 | 144 | 117 | 122 | 135 | 114 | 113 | 94 | 103 | 144 | 156 | 106 | 104 | 120 | 111 |
| 1929/30 | 91 | 117 | 124 | 100 | 114 | 107 | 98 | 103 | 121 | 149 | 106 | 99 | 120 | 121 |
| 1930/31 | 76 | 92 | 117 | 76 | 114 | 105 | 111 | 106 | 140 | 133 | 106 | 100 | 122 | 119 |
| 1931/32 | 72 | 92 | 92 | 61 | 114 | 101 | 121 | 100 | 128 | 129 | 113 | 100 | 127 | 111 |
| 1932/33 | 74 | 80 | 83 | 50 | 107 | 98 | 108 | 101 | 118 | 129 | 102 | 105 | 126 | 104 |
| 1933/34 | 137 | 80 | 83 | 102 | 92 | 92 | 106 | 99 | 112 | 119 | 100 | 96 | 120 | 99 |
| 1934/35 | 84 | 85 | 85 | 91 | 92 | 89 | 106 | 99 | 111 | 103 | 100 | 91 | 114 | 93 |
| 1935/36 | 122 | 85 | 90 | 115 | 92 | 90 | 100 | 97 | 110 | 103 | 100 | 96 | 109 | 89 |
| 1936/37 | 143 | 92 | 90 | 121 | 92 | 99 | 98 | 98 | 91 | 100 | 100 | 100 | 100 | 91 |
| 1937/38 | 110 | 99 | 100 | 107 | 100 | 102 | 100 | 100 | 92 | 100 | 100 | 100 | 100 | 100 |
| 1938/39 | 90 | 101 | 100 | 93 | 100 | 99 | 101 | 100 | 108 | 100 | 100 | 100 | 100 | 100 |
| 1939/40 | 117 | 101 | 100 | 93 | 100 | 109 | 101 | 100 | 167 | 107 | 100 | 103 | 97 | 100 |
| 1940/41 | 114 | 103 | 104 | 84 | 100 | 121 | 104 | 100 | 172 | 134 | 100 | 114 | 100 | 124 |
| 1941/42 | 114 | 108 | 115 | 88 | 103 | 132 | 110 | 100 | 179 | 155 | 100 | 128 | 106 | 136 |
| 1942/43 | 131 | 113 | 126 | 105 | 103 | 148 | 134 | 116 | 205 | 156 | 100 | 149 | 110 | 172 |
| 1943/44 | 133 | 117 | 134 | 112 | 103 | 152 | 134 | 116 | 223 | 155 | 100 | 149 | 113 | 193 |
| 1944/45 | 131 | 117 | 134 | 116 | 103 | 151 | 134 | 116 | 223 | 155 | 100 | 141 | 103 | 179 |
| 1945/46 | 131 | 128 | 134 | 139 | 103 | 148 | 144 | 116 | 238 | 155 | 100 | 129 | 100 | 171 |
| 1946/47 | 205 | 131 | 141 | 191 | 103 | 148 | 156 | 122 | 291 | 159 | 100 | 118 | 106 | 171 |
| 1947/48 | 330 | 149 | 154 | 247 | 140 | 165 | 164 | 135 | 371 | 187 | 114 | 133 | 122 | 204 |
| 1948/49 | 407 | 176 | 186 | 258 | 144 | 187 | 183 | 148 | 453 | 192 | 121 | 148 | 131 | 220 |
| 1949/50 | 537 | 204 | 222 | 293 | 144 | 213 | 211 | 165 | 509 | 210 | 136 | 156 | 134 | 236 |
| 1950/51 | 821 | 332 | 286 | 553 | 186 | 263 | 238 | 184 | 528 | 292 | 158 | 170 | 143 | 307 |
| 1951/52 | 665 | 436 | 364 | 407 | 312 | 319 | 280 | 220 | 975 | 423 | 192 | 202 | 190 | 471 |
| 1952/53 | 740 | 405 | 381 | 328 | 312 | 348 | 353 | 265 | 795 | 451 | 209 | 202 | 220 | 471 |
| 1953/54 | 711 | 413 | 393 | 363 | 312 | 330 | 358 | 273 | 556 | 383 | 212 | 195 | 216 | 462 |

Sources: Original series used in the above calculations were as follows: Wool Price—Average Price at N.S.W. Auctions (National Council of Wool Selling Brokers); Shearers' Allowance and Station Hands' Wage—Federal Pastoral Award including wool value allowances; Wholesale Prices (Basic Materials)—Commonwealth Bureau of Census and Statistics; all other items—N.S.W. Bureau of Statistics and Economics.

TABLE II
Index Numbers of Wool Prices and Costs—New Zealand
 (Base: Average 1938 and 1939 = 100)

| Year | Average Greasy Wool | Shearers' Allow- ance | Shep- herds' Wage | Price Prime Ewes | Whole- sale Prices | Price Fencing Wire | Price Wool- packs | Price Super- phos- phate | Price Motor Spirits | Price Cement | Price Timber | Price Perennial Rye Grass | Price White Clover |
|------|---------------------------|-----------------------------|-------------------------|------------------------|--------------------------|--------------------------|-------------------------|-----------------------------------|---------------------------|-----------------|-----------------|---------------------------------|--------------------------|
| 1924 | 164 | 76 | 74 | 115 | 106 | 86 | 135 | 165 | 86 | 117 | 97 | 111 | 124 |
| 1925 | 210 | 79 | 78 | 165 | 106 | 77 | 154 | 157 | 79 | 115 | 97 | 78 | 109 |
| 1926 | 124 | 79 | 78 | 129 | 100 | 70 | 165 | 155 | 69 | 111 | 97 | 78 | 84 |
| 1927 | 132 | 87 | 86 | 110 | 95 | 70 | 158 | 137 | 50 | 108 | 88 | 60 | 72 |
| 1928 | 174 | 87 | 104 | 144 | 94 | 68 | 146 | 134 | 52 | 107 | 90 | 70 | 80 |
| 1929 | 155 | 95 | 104 | 142 | 94 | 68 | 134 | 130 | 57 | 107 | 90 | 85 | 83 |
| 1930 | 89 | 92 | 104 | 105 | 91 | 69 | 114 | 128 | 57 | 103 | 93 | 95 | 78 |
| 1931 | 59 | 79 | 105 | 76 | 86 | 68 | 100 | 116 | 56 | 102 | 81 | 65 | 76 |
| 1932 | 55 | 67 | 68 | 59 | 83 | 69 | 97 | 105 | 61 | 101 | 73 | 78 | 126 |
| 1933 | 54 | 67 | 67 | 46 | 86 | 75 | 99 | 108 | 70 | 104 | 72 | 46 | 90 |
| 1934 | 115 | 57 | 71 | 85 | 86 | 72 | 100 | 108 | 67 | 104 | 76 | 62 | 100 |
| 1935 | 68 | 71 | 75 | 96 | 89 | 72 | 97 | 107 | 69 | 104 | 78 | 59 | 76 |
| 1936 | 95 | 62 | 86 | 97 | 90 | 72 | 97 | 106 | 70 | 102 | 81 | 49 | 73 |
| 1937 | 164 | 85 | 98 | 123 | 98 | 98 | 95 | 104 | 73 | 100 | 94 | 65 | 77 |
| 1938 | 105 | 110 | 98 | 115 | 97 | 104 | 95 | 100 | 97 | 100 | 99 | 88 | 87 |
| 1939 | 95 | 90 | 102 | 85 | 102 | 96 | 105 | 100 | 104 | 100 | 101 | 112 | 113 |
| 1940 | 134 | 87 | 102 | 110 | 113 | 137 | 121 | 100 | 127 | 102 | 104 | 123 | 197 |
| 1941 | 134 | 97 | 102 | 112 | 124 | 161 | 149 | 99 | 130 | 104 | 110 | 88 | 185 |
| 1942 | 134 | 98 | 102 | 95 | 134 | 170 | 154 | 103 | 136 | 111 | 114 | 99 | 246 |
| 1943 | 152 | 104 | 109 | 118 | 144 | 185 | 185 | 106 | 135 | 118 | 116 | 99 | 170 |
| 1944 | 152 | 104 | 109 | 117 | 148 | 185 | 185 | 106 | 135 | 119 | 116 | 114 | 189 |
| 1945 | 152 | 104 | 109 | 99 | 150 | 185 | 185 | 106 | 135 | 122 | 122 | 130 | 265 |
| 1946 | 151 | 111 | 133 | 147 | 151 | 185 | 185 | 106 | 128 | 121 | 130 | 159 | 263 |
| 1947 | 186 | 114 | 147 | 108 | 157 | 190 | 204 | 160 | 131 | 114 | 136 | 141 | 182 |
| 1948 | 261 | 120 | 168 | 167 | 174 | 257 | 313 | 253 | 140 | 130 | 144 | 156 | 201 |
| 1949 | 269 | 144 | 168 | 156 | 173 | 256 | 293 | 212 | 135 | 139 | 151 | 187 | 242 |
| 1950 | 395 | 147 | 185 | 189 | 189 | 219 | 273 | 202 | 143 | 160 | 164 | 284 | 325 |
| 1951 | 914 | 188 | 212 | — | 220 | 341 | 359 | 244 | 159 | 200 | 178 | 244 | 273 |
| 1952 | 418 | 370 | 212 | — | 244 | 332 | 487 | 274 | 155 | 266 | 192 | 179 | 178 |
| 1953 | 481 | 195 | 239 | — | 242 | 332 | 401 | 253 | 163 | 256 | 215 | 254 | 218 |
| 1954 | 523 | 215 | 263 | — | 240 | 240 | 331 | 246 | 157 | 250 | 229 | 444 | 299 |

Sources: The original price series on which this table is based were prepared by the Government Statistician. The wool price series represented average prices for the year ending 30th June. The Shearers' Allowance and Shepherds' Wage were average minimum rates paid in four principal districts at 31st March, the former being exclusive of the ration allowance. The price of prime ewes was the average of the wholesale price quotations for November of the preceding year and April of the current year in North Canterbury, quotations which were not recorded after April 1949. The timber price used was that of Rimu, Building A.

The second explanation is that wool (particularly wool of lower counts) is, in varying degrees, a joint product with meat. Some sheep, as well as being wool producers, are potential meat animals or at least producers of fat lambs. This means that, in certain parts of the industry, production decisions are made with reference to meat prices and that, in the extreme, wool may continue to be produced on animals raised primarily as meat producers irrespective of the level of wool prices.

But there are two additional enterprise relationships which are especially relevant in explaining wool production trends in Australia, where quite an important section of the sheep industry is found in and around the wheat belt. The first is the so-called supplementary relationship, which provides one economic basis for the combination of the sheep enterprise with wheat production.¹³ This relationship is perhaps best illustrated by means of production-possibility curves. In contrast to the usual competitive situation (Fig. 1), the production-

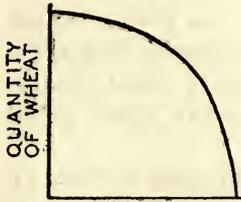


FIG. 1

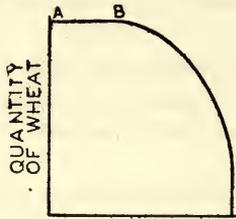


FIG. 2

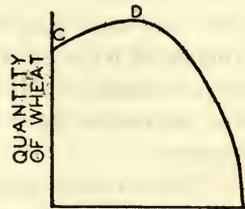


FIG. 3

possibility curve, when supplementarity prevails, is of the form shown in Fig. 2. The curve between A and B is a straight line, indicating that, with given resources, sheep (wool) production can be expanded to some degree without requiring any corresponding reduction in the output of wheat. Stated more precisely, the marginal rate of substitution of wool for wheat is zero within this zone. After point B, normal substitution relationships between the two enterprises prevail. This phenomenon arises primarily from the seasonality of rural operations, coupled with the fact that there is available a steady flow of services from the fixed resources on the farm, especially from the permanent and family labour. By appropriately timing operations, it is possible to expand sheep numbers quite considerably before this enterprise becomes competitive with wheat production. Within the area where strict supplementarity prevails, the relative prices of wool and wheat play no part in determining the number of sheep carried. To the extent that

13. Combination of sheep production with wheatgrowing is therefore not merely a matter of "good husbandry" as McMillan suggests (*op. cit.*, p. 61), but rather is sound economics.

farmers are operating in the competitive zone there will be some transference from wool to wheat following a drop in the price of wool relative to the price of wheat. However, the existence of the supplementary relationship does tend to set an economic limit to movement out of wool production. Similarly at the other end of the curve the presence of supplementarity may set a limit to transference from wheat to wool production if the ratio of wool to wheat prices increases.

The second enterprise relationship which is of significance in the wheat-sheep zone is the complementary relationship. This provides the economic basis for crop rotations and so-called ley-farming which are becoming increasingly important in south-eastern and south-western Australia. Such a relationship exists when expansion of one enterprise, a leguminous pasture for instance, causes the aggregate yield of the second enterprise (wheat) to increase, i.e. the marginal rate of substitution of pasture for wheat is positive where complementarity prevails. This is illustrated in Fig. 3. As with the supplementary relationship, the complementary phase eventually gives way to the competitive phase (at point D). Extremely high wool prices relative to the wheat price may encourage the typical farmer to extend his pasture at the expense of wheat. But the presence of such a relationship does again set an economic limit to the transfer of pasture land to wheat production, no matter how unfavourable the ratio of wool to wheat prices becomes.

These two production relationships then would seem to form an essential part of any explanation of inelasticity of wool production in this country.

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TWO-SECTOR PERIOD ANALYSIS

In recent economic analysis, some use has been made of models in which the economy is divided into two sectors, firms and households, with, correspondingly, two markets, a goods market and a labour market.¹ The purpose of this note is to examine some of the difficulties involved in the use of the aggregates "goods" and "labour."

I

In an earlier article we showed that, on the assumptions of full employment, profit maximisation, and monopsony or oligopsony in the labour market, the existence of an excess of vacancies over unemployed men is not *sufficient* evidence of disequilibrium in the labour

1. See particularly Bent Hansen: *A Study in the Theory of Inflation* (London, 1951), and Ralph Turvey and Hans Brems: "The Factor and Goods Markets", *Economica*, N.S., Vol. XVIII, No. 69, Feb. 1951, pp. 57-68.

market.² We argued, in other words, that the concept of "the" labour market may involve an illegitimate aggregation³ of individual demands and supplies. If this is correct, the Factor Purchase Function is also a difficult concept. Some consequences of this result may be explored a little further. Hansen shows that the term "*ex ante* demand" may be used in three senses.⁴ These are:

- (a) planned purchases—those which are considered most probable;
- (b) optimum purchases—those which would be most profitable; and
- (c) active attempts to purchase.

The essence of our earlier argument was that, while the demand of each firm in sense (b) may be equal to its supply, demand in sense (c) can still exceed supply, and thus cause an excess of vacancies and a misleading impression of disequilibrium.⁵ If we define the Factor Gap as demand in sense (c) minus supply, as Hansen suggests is proper for some purposes,⁶ then we can have an ostensible gap without disequilibrium. Let us call such a situation "Open-Gap Equilibrium,"⁷ *In Open-Gap Equilibrium, the Factor Purchase Function is zero.* Thus suppose that Open-Gap Equilibrium obtains: the economy is in full equilibrium, with a zero goods gap, and all firms are equating the marginal revenue product of labour with its marginal cost to them although there is an excess of vacancies at the ruling wage rate. Now assume that a permanent increase in the rate of investment or government spending opens a goods gap. In period 1 it is closed by running down stocks. But, provided that the increase is not large enough to lift employers' demand curves for labour above the corners in their

2. "The Factor Gap and the Level of Wages", *Economic Record*, Vol. XXX, No. 59, Nov. 1954, pp. 187-99.

3. A mathematical treatment of aggregation problems will be found in H. Theil: *Linear Aggregation of Economic Relations* (Amsterdam, 1954). Professor Theil's object is to construct aggregates such that the macro-models relating them will be consistent with the micromodels relating the microvariables of which the aggregates are composed. Our purpose, on the other hand, is to examine the implications of some aggregates actually in use.

4. *Op. cit.*, p. 24.

5. Hansen states incorrectly, p. 64, that when optimum purchases can just be carried out, demand is equal in all three senses. He does not appear to consider the possibility of active attempts to purchase exceeding optimum purchases except through "sham magnification".

6. *Op. cit.*, p. 65, where it is suggested that this is the appropriate definition when it is desired to concentrate on the expected increase in prices.

7. This study was originally suggested by the remarkable fact that, although control over maximum wage rates in New Zealand was abolished in 1950, when there were well over thirty thousand notified vacancies, the number of vacancies did not show any significant decline until 1952. The imperfections of New Zealand's wage statistics do not permit a definite conclusion, so we limit ourselves to suggesting that Open-Gap Equilibrium, with a zero Factor Purchase Function, may provide part of the explanation of this phenomenon.

marginal cost curves,⁸ there is no increase in factor income in period 2—the Factor Purchase Function is zero. For period 2, the *ex ante* goods gap is exactly repeated, there being no increase in disposable income (we neglect the possibility of an immediate dividend increase), and must be closed, either now or in a later period, by a price increase which cannot, however, cause any further shift in the demand curve for labour. Hence the opening, by increased demand, and the closing, by increased prices, of a goods gap, may, if it is not too large, occasion no change in the factor market save an increase in that ostensible and false gap which consists of vacancies advertised by firms that are in equilibrium. What has happened is that firms' money saving has increased and households' real saving. It is, therefore, the increase in the cost of living, rather than the operation of the multiplier, which will provide the stimulus to a wage increase.⁹ It should be remembered, of course, that these criticisms of the Factor Purchase Function only apply in full employment; but it is in a world of full employment, and partly for the study of inflation, that the concept has been developed.

II

The aggregation of any collection of non-homogeneous goods into one market presents an index number (aggregation) problem. Hansen's solution, in his study of open inflation, is to assume a single commodity.¹⁰ He then, on the same page, goes on to talk of the "demand for investment commodities" and, later, of "changes in the demand for them."¹¹ If there is only one commodity, investment can only be in stocks of that commodity, which is an undue restriction on the model.¹² This restriction could be avoided, at the cost of some additional complication, by dividing the economy into three sections, Households, Consumer Goods Industry, and Investment Goods Industry.

III

Aggregation into a single goods market has some further implications. One of the most remarkable innovations in this type of period

8. See my article "The Factor Gap and the Level of Wages", *op. cit.*, pp. 190, 192-3, 197.

9. Models of an economy in which wages are closely related to the cost of living will be found in Turvey: "Some Aspects of the Theory of Inflation in a Closed Economy", *Economic Journal*, Vol. LXI, No. 243, Sept. 1951, pp. 531-43. The relative importance of demand-induced and price-determined wage increases in the inflationary process of the last fifteen years is discussed by A. J. Brown: *The Great Inflation 1939-1951* (London, 1955). We may note that, if wage increases at full employment were determined by a positive factor purchase function, then, in a two-sector, one-commodity model, wage increases would bear a fixed relationship to increases in the cost of living.

10. *Op. cit.*, p. 160.

11. *Ibid.*, p. 171.

12. Hansen also assumes a single scarce factor, labour, p. 160, but avoids the difficulty that this must give constant returns by assuming that it is combined with a given stock of capital equipment.

analysis is the aggregation of consumer goods and investment goods. It is argued that the *ex ante* equality of saving and investment is a necessary but not a sufficient condition of equilibrium because it is possible that

$$I_a - S_a = 0 = \text{a positive or negative Goods Gap} + \\ \text{an equal Factor Gap of opposite sign.}$$

There is, however, the further possibility that a zero Goods Gap equals an Investment Goods Gap plus an equal Consumer Goods Gap of opposite sign, and this can hardly be dismissed as a matter of trombones and ear plugs. Since this method of analysis has such strong Scandinavian roots, it seems appropriate to quote Lundberg: "This much we do maintain, however, that the distinction between capital and consumption goods is fundamental for an understanding of the functioning of the capitalist system."¹³ This distinction cannot be recovered from the term on the left hand side of the equation ($I_a - S_a = \text{Goods Gap} + \text{Factor Gap}$) because *ex ante* Investment includes, *inter alia*, planned investment in stocks of consumer goods.

IV

We now have reason to question Turvey's assertion that "the division between the factor and goods market is . . . the most useful of the possible single divisions, at least for short-run analysis".¹⁴ Our objection to this division is that we gain a Factor Purchase Function which, at full employment, is discontinuous and sometimes zero, at the expense of losing the vital distinction between consumer and capital goods. This may not be a very good bargain.

G. C. ARCHIBALD

London.

"THE BALANCED-BUDGET THEOREM": A COMMENT

In a note in the last *Economic Record*,¹ Mr. Hagger suggests that economists have been erroneously assuming the validity of a unit multiplier when there is an equal change in both government expenditure and taxes. A closer examination of Mr. Hagger's note, however, reveals that he has unfortunately misinterpreted his own model. A correct interpretation leads to the reinstatement of the balanced-budget theorem and accordingly the removal of any signs of anxiety experienced by economists since reading the abovementioned note.

13. Erik Lundberg: *Studies in the Theory of Economic Expansion* (London, 1937), p. 169.

14. R. Turvey: "Some Notes on Multiplier Theory", *American Economic Review*, Vol. XLII, No. 3, June 1953, p. 292.

1. A. Hagger, "The Balanced-Budget Theorem." *Economic Record*, May 1955. Pp. 95-97.

Mr. Hagger is concerned about the application of the Haavelmo-Samuelson theorem when the level of tax collections cannot be independently determined, but is a function of the tax structure and the level of national income. This case is covered by the general theorem enunciated so neatly by Samuelson.² The operative condition in the theorem is that both government expenditure and the level of tax collections should change by the same amount. Since government expenditure is a part of national income, the level of personal disposable income remains unaltered under these conditions no matter why the tax level changes. Thus with "all other things remaining unchanged," a change in government expenditure leads to the same change in national income.

If this can be demonstrated generally, it must be true for any specific model including the linear one selected by Mr. Hagger. The reason he arrives at a different result is that in moving from his equation (2) to equation (3) he overlooked the fact that an increase in government expenditure also increases national income. Hence, it is not possible to assume ΔY to be equal to zero, so that instead of equating ΔG to Δd it should be equated to $\Delta d + e\Delta Y$. Thus equation (3) should read

$$\Delta Y = \frac{\Delta G (1 - b) + b.e. \Delta Y}{1 - b + be}$$

$$\text{so that } \Delta Y = \Delta G \cdot \frac{1 - b}{1 - b}$$

$$\text{or } \frac{\Delta Y}{\Delta G} = 1$$

This result can of course be vitiated by relaxing the assumption that "other things remain constant." A number of items of national expenditure have been held constant in this simple model, as well as assuming the consumption function remains unchanged for any alteration in the tax structure. Any change in the levels of investment, exports or imports as well as any shift in the consumption function will affect the unit multiplier, *provided these factors are not each directly related to personal disposable income*. In other words, if the levels of investment and imports are functions of personal disposable income and if the level of exports remains constant and there is no shift in the consumption function, the unit multiplier still holds.

The unit multiplier theorem accordingly holds in a much wider number of cases than Mr. Hagger supposes, although, of course, it can be upset with complete generalization. But what economic theorem can withstand being generalized?

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2. P. A. Samuelson, "Simple Mathematics of Income Determination." Essays in Honour of Alvin Hansen (Norton) 1948. Pp. 133-155.

"THE BALANCED-BUDGET THEOREM": REPLY

In the note on which Professor Cochrane has commented I raised the question "How can the balanced-budget theorem be demonstrated for a model which differs from the one normally used for the purpose in making Tax Collections induced rather than autonomous?" I now think that to give a full answer to this question we have to distinguish three cases.

The first is the case where the change in Tax Collections involves no change in tax structure. In terms of the model used in my note this case can be characterised by

$$\Delta T = e \Delta Y.$$

The second is the case where the change in Tax Collections involves a change in the tax structure such that the average tax rate changes but not the marginal tax rate. This case can be characterised by

$$\Delta T = \Delta d + e \Delta Y$$

The third case is the one which can be characterised by

$$\Delta T = \Delta d + \Delta (eY)$$

Here, of course, the change in Tax Collections involves a change of tax structure of such a kind that both average and marginal tax rates change.

In writing the note I had in mind the second of these two cases. Professor Cochrane is, of course, quite right in saying that, in handling this case, I made the mistake of characterising it by

$$\Delta T = \Delta d$$

and that, had this mistake not been made, I would have been led to the usual conclusion—namely that

$$\frac{\Delta Y}{\Delta G} = 1$$

This case, however, seems to be less interesting than the third since, in practice, any attempt on the part of a Government to bring about a tax-financed increase in its spending would almost certainly mean a change in the marginal, as well as the average tax rate. It is, accordingly, worth pointing out that, in this case too, our model indicates an increase in National Income of the same amount as the increase in Government Expenditure.¹ This can be easily demonstrated starting from the expression

$$Y = a + bY - bd - beY + I + G + E - M.$$

The primary concern of my note was with the mechanics of demonstrating the theorem when Tax Collections are induced. I made the incidental point, however,² that once we pass from the very simple

1. The same is also true of the first case.

2. In footnote 1 of my note.

model customarily used to discuss the theorem to something a little more realistic, the theorem ceases to hold in quite the form in which it has sometimes been stated.

It seems worth emphasising that *this* point has not been upset. All that Professor Cochrane has shown is that the "unit-multiplier" version of the theorem still applies if our *only* refinement is to make Tax Collections induced rather than autonomous. As he is no doubt well aware, it ceases to apply if the basic model is refined in other directions.

A. HAGGER

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SCHUMPETER'S EPILOGUE

There is no risk in predicting that the year 1954 will in the history of economics live on as the date of publication of one book, alongside though not on the same level with 1776 and 1890. Schumpeter's posthumous opus maximum¹ neither fashions nor reshapes a new science but, by surveying its variegated past, setting it in its historical and social context and critically assessing achievements and failures from the viewpoint of one of the most analytically poignant and scholarly-passionate of contemporary economists, it creates a new situation. Only yesterday a competent reviewer could observe that the history of economic thought was fast becoming a "threadbare matter". Nobody who has read this tome of 1,200-odd pages, containing more than 600,000 words and treating of 1,000-2,000 authors, can fail to feel that this diagnosis does not hold any more. There is still a Golden Fleece to win.

Written in a style a judicious critic has called "crabbed" but which according to him an Englishman would not have scorned to choose, the book shows the brilliant author at the acme of his capacities at an age when ludicrously antiquated statutes require an academic teacher to retire (though not at Harvard); taking delight in covering a canvas of immense and multifarious dimensions; arguing with uncanny resources of flexibility and lucidity, learning and wit; impishly rejoicing in turning tables and in excavating deeply buried victims of professional narrowness; and passing judgment on great and small in the grand manner of a general criticizing troops and leaders after large-scale manoeuvres.

The gratitude we all owe to this dazzling book is not lessened by the doubt whether an undertaking of this scope did not exceed the powers even of a writer of Schumpeter's energy and endowment and

1. Joseph A. Schumpeter, *History of Economic Analysis*. Edited from manuscript by Elizabeth Boody Schumpeter. George Allen & Unwin Ltd., London; and New York University Press; 1954. Pp. xxv + 1260. \$17.50.

who was able to devote to it the last nine years of a solitary scholar living in semi-cloistral seclusion at Harvard University, sheltered by an exceptionally efficient economist-wife . . . at some intellectual distance, it would seem, for she tells us that he spoke about his work only at two brief interviews granted to her when publishers grew too restive—a curious fact which has not prevented her from making a great book out of what at Schumpeter's death appeared to be a labyrinthine formation of manuscripts and drafts in every conceivable degree of precarious finality. In one important case (the chapter on Adam Smith) she decided to insert a draft definitely discarded by the author showing, not only here, the ruthless common sense of a first-rate administrator.

As a matter of fact this is not one book but four or five books: first, a history of economic analysis (which in Schumpeter's language meant not only theory, a word he often puts in significant quotation marks) but also statistics (to him the object of a rather ineffectual kind of unrequited love) and history (to which he rightly gives pride of place and by which, somewhat doubtfully, he understood also empirical research into present-day conditions); secondly, a series of commemorative tributes to a large (but by no means complete) number of economists, mainly French and Italian, who did not contribute a jot to economic analysis but worked rather efficiently with crude and outdated tools; thirdly, a series of poignant but sketchy essays on the intellectual and social backgrounds of various epochs, often only of slight or no significance for the works of economists; fourthly, a little Palgrave supplying thumb-nail sketches of the lives and writings of all economists and many other writers; fifthly, a short but powerful introductory dissertation on the methodology and sociology of economic science. This is a Rabelaisian feast but which would have required more than one cook; and if the reader should on many occasions feel that important propositions are left unsubstantiated and that other matters are all too glibly glossed over, he is not to blame.

Moreover, the book is written on more than one level. Some pages seem to address themselves to quite untutored students, some to candidates for a Ph.D. thesis, while others read like monologues in the workshop or echoes of imaginary conversations with those few colleagues the author would not have put in the first category. Only the chapters closely corresponding to Schumpeter's regular Harvard lectures are highly polished, ready for the use of undergraduates and indeed indispensable to them. I venture to suggest that a separate—and cheap—edition of that string of concise and incisive monographs on well-known bones of academic contention (e.g. Say's Law, Quantity Theorem, Production Function, Utility and Welfare), which to my mind form the hardest core of the book, would raise the level of economic teaching in our time more than any other single work. Taken

as a whole, this is—thank God—no textbook. It requires intellectually mature readers able to take things of unequal value in their stride: passages of great luminosity and weight, others skating with delightful virtuosity over very thin ice, others simply exasperating because impressionistic, arbitrary and displaying dangerous forensic abilities for which the greatest Greek sophists would have envied the author.

To argue cases where Schumpeter is in error, partly owing to his temperament and personal "ideology" as defined by himself, partly owing to the physical impossibility of remembering exactly what he had read of more than a thousand authors, not a few of whom have written many large-sized volumes, would obviously distort the proportions of a note to which for editorial reasons only one word could be allotted for roughly every five hundred Schumpeter wrote in this book. In his admirable review in the *Quarterly Journal of Economics* Lionel Robbins has noted some of those untenable positions. Here I should only like to add the warning that the reader unfamiliar with Aristotelian, Roman, medieval and much later thought, e.g. Knapp's *State Theory of Money* and its alleged political sequelae, should verify each statement by consulting the texts. To my mind they are in some significant cases diametrically opposed to what Schumpeter makes them say. It seems strange that an author who began as a jurist should have confused the Institutes of Gaius with those of Justinian whose conceptions of natural law differ profoundly, a howler which would tell heavily against any law school undergraduate. Aristotle's *Physics* (by Schumpeter somewhat snobbishly styled *Physicae Auscultationes*, without explaining this title which turns out to be a Byzantine translation of a Greek term that denotes works not written for the general public but which had to be supplemented by oral teaching, a title which even so scholarly an author as Professor Ross does not use) are obviously and fatally misquoted. Hardly less grave mistakes have marred Schumpeter's comparison of Quesnay's and Aquinas's conceptions of natural law. If Schumpeter had only stooped to consult Professor August Oncken's *Geschichte der National-ökonomie* Vol. I, *Die Zeit vor Adam Smith* (Leipzig 1902), which has lost only little of its value in the course of half a century, he would have gained a more adequate notion of the relation of "ordre naturel" and "ordre positif" of Quesnay (and he would not have retained the long-corrected error which makes him the son of a lawyer). The list could easily be extended, but even if thirty errors of some magnitude should be found, they would, on the average, occur only on every fortieth of these large-scale pages. The real problems raised by this book have to be sought in a deeper stratum.

Among its main achievements I would rank first the demonstration that more than in any other science the systematic approach must be paired with the genetic and that the history of economic thought

(using the term in a sense similar to that of R. G. Collingwood's *Idea of History*, not that of Schumpeter to whom "thought" means nothing but the dismal residue of former philosophies obscurely floating in the amorphous "mind of the public") is indispensable to a clear understanding of analysis in general and "theory" in particular, for reasons the exposition of which forms one of the already classic sections of the book. Not less important is the fact that Schumpeter, who set out to write a history of theorems not of men and movements, was by the very logic of his task and by his great sense of what really matters, led to include writers and ideas far removed from the august sphere of the beloved system of Walras equations. Three hundred large pages, crammed with fact and comment, are devoted to pre-Ricardian thought. They vindicate the merits not only of mercantilist but also of Cameralist and late Scholastic work to which he was perhaps congenitally attracted, being one of the last distinguished Hapsburgians whose great epoch was that of Counter-Reformation and Baroque. For the first time Adam Smith (he writes A. Smith in quite unjustifiable deviation from good English usage which demands the full name or the monumental Smith) appears not only as a sifter, clarifier and unifier of his free-trade precursors and adumbrators of a logic of the market, but as the crest of a long wave of what he calls "consultant administrators"—a great improvement in perspective won, however, at the high price of forgetting that the famous formula at the beginning of the Fourth Book of the *Wealth of Nations* is matched by a quite different definition of political economy in the later chapters of the same book; and of committing the unpardonable sin of not devoting to the founder of our science a separate chapter. The reason for this lapse from grace is probably due to the original intention of choosing theorems as his heroes, not authors. This motive may also explain, but cannot justify, Schumpeter's somewhat thinnish treatment of Ricardo (whose work he considers not as the continuation of Smithian economics but as a grand détour, here following the tradition of the German Historical School) in a chapter on the Ricardians, under the rather improper title "Review of the Troops".

Like Robbins in his book *The Theory of Economic Policy in English Political Economy* (reviewed by me in *Kyklos*, 1st February, 1954), Schumpeter is perhaps best in his critical account of John Stuart Mill, slightly less final on Marshall and, of course, most sympathetic in his appreciation of Walras and Boehm-Bawerk. What he has to say on authors of the twentieth century is mostly slight and scrappy. Of the profound transmutations, searchings and experiments which make our own time one of the most fascinating periods of economic thought, he seems to have sensed little and approved less. The chapter on the Theory of Games, "Leontieff's Linear Programming" (sic), the work of the Cowles Commission, etc., remained unwritten, and there

is no indication whatsoever that if written it would have touched the root of the matter. Of the German scholars who insisted on a re-consideration of the very foundations of traditional theory (von Gottl-Ottlilienfeld and Othmar Spann) he speaks with unveiled hostility and even flippancy. Curiously enough, he also scorns Senior's insistence on a clarification of fundamental notions (which he mistakes for mere squabbles over terminology). His impatience with this author made him even overlook the fact that the Appendix on Ambiguous Terms to Whateley's *Logic* had been, according to the clear statement of the Preface, contributed by Senior himself.

To the last Schumpeter remained not only loyal to, but also imprisoned by, the initial "vision" (his hardly less ambiguous term for what was formerly called intuition or *Anschaung*) of Walras' work which he considered as the Magna Carta of economic analysis, with two far-reaching consequences. He remained spellbound by the task of "dynamizing" the equations of his true master, a forlorn hope, as Arthur Smithies aptly calls it. (What good could have come from the endeavour to "dynamize" Archimedean physics? Certainly not Galilean science.) Secondly Schumpeter continued to identify "theory" with the elaboration of "models", i.e. thought-experiments which are in our science indispensable but are essentially unable to perform the work of a true theory of economic life seen as a whole and in its fundamental relations to the realm of politics, ethics, social and cultural life—a very old and still new type of theory which is required in order to clarify and guide action in concrete situations, the Rhodos of all economic thought, analytical or synthetical. The deeper reason for this attitude lies in Schumpeter's technical and after all "positivistic" conception of science. True knowledge he identified with "tooled knowledge", and thus the history of economic thought was for him the uni-dimensional process of shaping and reshaping of such tools, in ever more complete freedom from the intrusion of other intellectual and practical pursuits. This had not been the original and everlasting meaning of theory, but it stands out as a most lucid expression of the character of this age which spurns the spirit and all knowledge of essences which it considers as delusive symbols of bondage . . . only in order to become enslaved to all kinds of machinery, intellectual and otherwise.

Did Schumpeter realize the dialectical implications of this attitude? In the draft of his Mexican lectures included in his book he sees in the pure analytical structures at the altars of which he worshipped, the ideal tools of economic planning on the largest scale ever dreamt of: a science which would perform the same services to social life as natural science to the domination of the forces of nature. A tool-making science devoted to the free pursuit of knowledge for the sake of knowledge becomes the handmaid of a style of life Schumpeter must have loathed profoundly. Perhaps this recognition goes far to explain the

utter despondency that speaks out of his latest pictures. Another factor in the play may be discerned in the last finished chapter of the book, a painfully measured—neither unjust nor just—appreciation of the work of Keynes with whom for more than one decade he had been engaged in a silent contest for leadership which was in truth an Agon between two ideas: the economic analyst as Schumpeter dreamt him and the political economist in a wider and more fertile sense as Keynes had described him in his Marshall Memorial. The political economist had conquered.

KURT SINGER

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NEWS AND NOTES

The Central Council of the Economic Society met during the A.N.Z.A.A.S. meeting in Melbourne during August. Professor Wilfred Prest was appointed President of the Society, and the following officers were also elected:

Hon. Secretary: Mr. R. F. Holder.

Hon. Treasurer: Professor Sir Alexander Fitzgerald.

Hon. Asst. Secretary/Treasurer: Mr. A. D. Barton.

Hon. Editor of the Economic Record: Professor R. I. Downing.

Editorial Board: Professor H. W. Arndt, Professor S. J. Butlin, Dr. E. P. Neale, Sir Lennon Raws, Professor C. G. F. Simkin.

Hon. Auditor: Mr. W. Stewart.

The long and valuable services to the Society of Mr. G. A. Weller, the retiring President, were recognized by his election as an Honorary Life Member. Sir Lennon Raws, who has been a member of the Economic Society since its inception, was also elected Honorary Life Member.

The Thirty-first Meeting of the Australian and New Zealand Association for the Advancement of Science was held in Melbourne from 17th to 24th August 1955. Dr. H. C. Coombs presided over Section G. His presidential address "Economic Development and Financial Stability" is printed elsewhere in this issue.

During this meeting four symposia were held: "The Future of Australia's External Trade" (Professor G. Firth, C. D. Kemp and G. Warwick Smith); "Direction of Current Economic Growth with Special Reference to the Allocation of Resources between Agriculture and Industry" (Dr. K. O. Campbell, D. M. Hocking and N. Wills); "Wage Determination in the Australian Economy" (Dr. J. E. Isaac, Professors T. Swan and K. Walker); "Economic Development of Australia since 1850" (N. G. Butlin, Dr. E. Dunsdorfs and D. H. Merry).

Other papers read included: "The Changing Pattern of Private International Investment" (Dr. H. F. Bell); "Sterling Area Domestic Policies and Convertibility" (Dr. J. O. N. Perkins); "Progress Report on an Investigation into the Structure of Australian Industry, 1946-7" (Associate-Professor B. Cameron); "A New Look at the Mechanism of the Australian Economy" (R. G. Mountain); "Current Research into the Cost of Labour Turnover" (W. J. Byrt); "Saving and Investment in New Zealand" (G. P. Braae); "The Method of

Economics" (K. D. Rivett); "The Social Survey—An Outmoded Sociological Method" (G. B. Sharp); "A Survey of Expenditure Patterns of Graziers, 1949-54" (Dr. K. O. Campbell and R. W. Archer).

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Correction

On page 34 of the May 1955 issue of the *Economic Record*, equation (1a'') should read:

$$\frac{X_r}{L_r} = \frac{\partial X_r}{\partial L_r} + \frac{C_r}{L_r} \frac{\partial X_r}{\partial C_r}$$

REVIEWS

War Economy 1939-1942. By S. J. BUTLIN. (Australian War Memorial, Canberra, 1955.) Pp. xvii + 516. 25/- Aust.

This book is the second to appear of those planned as Series 4 (Civil) of the official history of Australia in the war of 1939-1945. The first ten chapters bring the story to roughly the end of 1940 and beginning of 1941. For the period of 1941 up to the attack on Pearl Harbour in December some of the sectional narratives of the first nine chapters are continued and are then followed by a closing summary assessment of Australia's state of preparedness to meet the "immediate and terrifying" threat of full-scale war in the Pacific.

The task of the author in tracing and interlacing the many strands was indeed formidable. If it be the mark of a good artist to compose a picture with an economy of selection which permits him to convey his purpose with clarity and conviction, Professor Butlin must be accorded high praise as an artist-historian. The structure of his work, he says, represents "an uneasy compromise between chronology and clarity." As historical narrative it had to pay due regard to development in time, but, as the purpose was to portray the changes in a totality called "war economy," sectional developments, "taken up roughly in the order in which their subjects demanded serious government attention," had to be shown to fit together. The reader must needs keep his wits sharp as he follows the overlying narratives, but he is aided in seeing how they fit together by the author's skill and quickly finds himself absorbed in an enlivening story.

How ready was the Australian economy to face the demands of war in September 1939? Professor Butlin states that "between the end of the War of 1914-18 and the Imperial Conference of 1937 it is not easy to find any evidence that Australians had any conception of the economic implications of a new war." By 1937 the threat of war was real enough. The Imperial Conference of that year did at least produce a definiteness of purpose and precision of action within Australia in the next few months—to ensure raw material supplies (especially foods) to the United Kingdom in the event of war.

By mid-1939 the British and Australian Governments had reached substantial agreement or understanding on the sale of the whole wool clip and of the export surplus of Australian meat, dairy produce, eggs, dried and canned fruits, sugar and base metals. Moreover, attention had increasingly been concentrated on local munitions production and on projects related to it, culminating in the establishment of a new Department of Supply and Development. Concern with manpower

supply and control (which had already engaged the attention of the Manpower Committee within the Department of Defence) produced the concurrent National Registration Act, the (defective) manpower and (futile) wealth censuses, and the preparation of the List of Reserved Occupations.

These, and other preparations were more or less included in the epitome of planning measures written into the Commonwealth War Book months before the war broke out. Professor Butlin stresses, however, the inadequacy of the War Book planning. Its conspicuous gaps indicated that even planning had not reached a definite paper form when hostilities came. Both surface indications and the current state of the public mind pointed to unpreparedness of the economy itself. Usable data from the National Register were not ready, neither was there a manpower organisation beyond the first step of manpower officers under the Manpower Committee. Aircraft production was still in the elementary stage, as was munitions production. No war budget existed and a peace budget designed for peace-time commitments had to serve. The vigorous implementing of the pre-war plans for export contracts and pressure for ships to carry the exports, the excited efforts to conserve oversea markets for producers not covered by contracts, the discussion constantly of war-time policies in terms of their effects on employment, the acceptance of modest tax increases as though they were disastrous—all these and other evidences of a predominant “business as usual” mentality clearly indicated the general unreadiness for the war.

Nor was this initial reluctance to accept adequate adaptation completely dispelled by the end of the second year of the war. By the beginning of 1941 Australia's war economy had “something of the appearance of a jig-saw puzzle barely commenced. Individuals and organisations were busily at work on small, mainly unrelated sections. Whether they would all fit together in the end was not yet a serious question and in any case the full pattern was still uncertain.” Professor Butlin as an historian makes no pretence that foresight can ever be as clear-eyed as hindsight. But he does point to the dragging weakness which would undoubtedly have hindered adaptation even if foresight had been much clearer, namely, the public unwillingness to accept economic sacrifices.

Each of the chapters of the book dealing with a major area of the jig-saw puzzle focuses on a particular type of problem but always with an eye to the interlinking with the problems of other major areas and with those of the economy as a whole. Price control—the first control to be fully developed administratively and to be made effectively operative—was such an area. In the first two years it attained its objectives to a high degree. This was because (apart from the choice of a Commissioner who was an economist) there was the combination

of "a fairly easily manageable price problem, an approach which looked to other controls for basic support, and a setting of attainable rather than ideal standards of control."

Other major areas of special but ramifying problems were the export industries, shipping, external finance and controls over external trade, the supply, training and allocation of manpower, and, centrally to them all, the war-time budgets. The story of some of them (for instance, shipping) is very intricate but each is handled with great skill by the author.

Such a short review as this can do but the scantiest justice to this excellent book. Its readers will look forward with lively anticipation to rewarding study of the second volume.

F. R. E. MAULDON

University of Western Australia.

Wartime Agriculture in Australia and New Zealand 1939-50. By J. G. CRAWFORD, C. M. DONALD, C. B. DOWSETT and D. B. WILLIAMS, and A. A. ROSS. Food and Research Institute, Stanford University. 353 pages. Price 78/9 Aust.

This book reviews in a vigorous fashion the wartime contributions of agriculture in both Australia and New Zealand. It is a story of what was, on the whole, a worthy effort in the face of many difficulties.

The authors show how the pre-war pattern of agriculture set limits in both dominions to what could be accomplished during the war period. The depression of the thirties had hit both countries but was particularly severe in Australia where wheat growing, which was only second in importance to wool production, was in a serious position. The Australian dairy industry was also depressed because of higher costs than those operating in New Zealand.

The lack of clear leadership in agricultural policy in Australia is criticized. This was partly due to the pre-war marketing problems, which were very acute. Right up to the end of 1941 disposal was the difficulty rather than production. As a result farmers were often advised to produce less rather than more. It was difficult to develop enterprise and initiative while these conditions existed.

The chapter on Rural Manpower makes challenging reading. The loss of country workers was not serious during the first two years of the war but after the outbreak of war in the Pacific with the imminent threat of invasion the demand for men for the fighting services became imperative. There was also an urgent call for men for the munition factories and for the construction of the many requirements of war. As a result there was a great rush of men from the farms just as the demand for the produce from the land was greater by far than could be supplied. Permanent male labour fell to 80 per cent while

the vitally important seasonal labour fell at one point to 44 per cent of the 1939 level.

The Manpower Directorate did its utmost to provide the most essential labour requirements but it became impossible to fill the ever growing demand for food which continued to come from Britain and also in growing quantities from the fighting forces in the Pacific area.

The authors do not attribute blame for the position but point out the tragedy of the agricultural industry being robbed of the chance of giving great service because of the shortage of men and material. The position was gradually retrieved after the middle of 1943 but the return of men from the armed forces was painfully slow.

The story of the struggle for scarce materials is well told. There were shortages in almost all requirements but perhaps the most serious was the shortage of superphosphate after Japan had seized the sources of supply of rock phosphate in Nauru and Ocean Islands. Chart 8, p. 115, shows how the Australian supply of fertilizer fell to half the pre-war tonnage while in U.S. the supply was doubled. The shortage had a disastrous effect on many forms of production. One slight compensation was that the inevitably severe rationing gave the opportunity to guide production towards the most essential requirements.

The authors are critical of the Australian price policy. They point out that there was a division of responsibility insomuch that neither export nor contract prices were under the control of the Prices Commission. It is thought that too much stress was placed on stabilisation and that price was not used sufficiently to guide production.

The movement of meat prices is said to have been too timid and that export prices should have been higher. This rather ignores the fact that U.K. strove to hold prices of meat from various sources reasonably in line and that there was no hope of gaining higher prices for meat from Australia particularly when we could ship so little. Moreover it was not the lack of price that kept down meat production during the first two years of the war but the acute shortage of refrigerated space and the need to turn good meat into canned products.

When the demand expanded so dramatically late in 1942 there was confident expectation of expanding meat production in spite of the shortage of labour and material. In fact the tonnage of meat produced for 1942-3 was well above pre-war average. Then the drought of 1944 and '45 reduced the sheep population by the "staggering loss of 27 million sheep" and dealt a heavy blow at both dairy and beef production. Under these conditions extreme meat prices would only have helped the man who had stock to sell at the expense of the man who had to buy to replace losses. As it was many young females were killed for meat when they should have been kept for breeders. The effect of that record drought cannot be overstressed. During 1940 and

'41 Australia had much produce that could not be shipped but when the demand for food became most urgent the capacity to supply was drastically cut by stock losses which limited production for years ahead.

There is more justification for the criticism that butter prices were kept too low for too long, and that the increased price that was paid from June 1943 should have been secured earlier. The pity of it is that the increase that was plainly necessary should have been associated with the so called "cost of production" with all its manifest weaknesses. This plausible method of deciding market prices has since led the industry into many grave difficulties.

Many references are made to the "surplus complex" which affected not only planners in Canberra but also commercial men who claimed to be essentially practical. The irony is that the complex that seemed so strange when the book was written does not seem so silly to-day.

The authors point to the greater drive in the current agricultural policy and the lift in output over recent years. The need for further production is stressed in order to help maintain Australia's trade balance and to supply the needs of a fast growing population. Emphasis is placed upon the policy adopted by the Agricultural Council which set out in April 1952 a number of "production goals." On the whole these should prove useful but it is well to remember that peering into the future of agricultural markets is a misty business. This is illustrated by the goal set up for wheatgrowers in 1952 of 13.65 million acres whereas in 1955 farmers are being urged to reduce the current acreage of slightly over 10 million!

The New Zealand account which is written by A. A. Ross reveals many problems similar to those operating in Australia. Owing to an acute balance of trade position before the war New Zealand started with a low level of essential supplies. Shortage of superphosphate was acute there also but because their pastures had been top dressed over a longer period and more liberally than in Australia there was sufficient residual supply in many areas to maintain production.

There was a serious shortage of tractors for much of the time but later the Dominion seems to have been more successful than Australia in securing supplies of this essential plant.

The lack of refrigerated space checked expansion of the meat industry in 1940 and '41 but over the whole period "meat production rose to unprecedented heights".

Dairy production fell somewhat on the pre-war average but in view of all the shortages the decrease in tonnage was remarkably small. Great credit is given to the Director of the Dairy Division whose prestige and personality enabled him to hold the confidence of the dairy industry.

New Zealand seems to have been remarkably successful in stabilising the price level of primary and other products. Far from paying subsidies to maintain production "under the terms of the guaranteed price scheme, any surplus between the price received and the price payable to farmers was retained in the pool account as a reserve against a recession of overseas prices." Thus it was that both the meat and dairy industries finished up the war with big sums of money in their reserve account.

Ross sums the matter up rather modestly when he says "under the conditions in which New Zealand found herself during the war years, government intervention into food and agricultural matters proved on the balance to be successful."

Both the Australian and the New Zealand sections contain full and well chosen appendix tables and indexes.

I have noticed two typographical errors, one on page 170 where the percentage of production represented by wool and wheat have been transposed; the other on page 207 where 1953 is used instead of 1943.

On the whole I have found the reading of *Wartime Agriculture* a stimulating experience and commend it to all interested in the improvement of our primary industries.

W. S. KELLY

Tarlee, South Australia.

Public Capital Formation in Australia: Estimates 1860-1900. By N. G. BUTLIN and H. DE MEEL. (Department of Economics, Australian National University, Canberra, 1954.) Pp. 226. No price stated.

The results of Mr. Butlin's labours to produce reliable quantitative information regarding the major determinants of Australian development have long been eagerly awaited. This first instalment dealing with public investment in each of the six colonies fully justifies that eagerness. Careful consideration of the economic content of the concepts involved before attempting to measure them is always necessary before any empiric investigation begins. On the other hand, particularly in historical investigations, it is often true that the only available data are in a form that makes it impossible to provide aggregates that are those theoretically desirable, and some compromise is necessary. Mr. Butlin and his colleagues however appear to have made their compromises with great skill and great honesty. The discussion of the source material used and its pitfalls will be of great service to further investigations, if indeed there is room for any more work to be done in this field.

No reviewer could presume to criticise the detailed figures presented. One might perhaps have asked for some further analysis of them, perhaps even at the elementary level of some graphical representation to indicate trend movements and to compare the patterns between the various colonies. Clearly however the major analysis, both theoretical and statistical, must await the production of comparable figures on the private sector, which it is understood may shortly be expected. At that stage, the appetite which has been so strongly stimulated by the present monograph may be fully satisfied. At that time, also, a proper assessment of the present monograph will be possible. But, in the meantime, no economic historian, development theorist, or economic statistician should fail to study this monograph with the utmost care, respect and gratitude.

R. S. G. RUTHERFORD

University of Sydney.

Atlas of Australian Resources. Prepared by the Department of National Development, Canberra. Edited by KONRAD FRENZEL. (Angus and Robertson, Sydney, 1954.) Ten maps with commentaries, 10/6 each, Aust.

The first ten maps of the series which is to consist in all of forty-two maps appear in this issue. They must be obtained in one size, 28½ inches by 30 inches, in three slightly different forms, in loose sheets, unfolded, folded, or linen-strip mounted. Each map is accompanied by a commentary in a separate booklet of 8-16 pages. Except for some small-scale climate maps they are all on the one scale, 1:6,000,000 (94.7 miles to 1 inch) using a polyconic projection.

All of the large-scale maps are most attractively printed in colour over a base map showing principal rivers, lakes, coastal features, mountain ranges, railways, and centres of population. Contour lines are not given but a considerable number of heights of individual points (not named) are included.

Nothing like this has been previously attempted in Australia and the atlas as a whole marks a great step forward in the mapping of information about the country as well as in setting a high standard of attractive cartography. The Editor, Dr. Konrad Frenzel, pointed out in an article published in the *Australian Geographer* (March 1953), that the compilation of resources maps has become, during the post-war period, the business of government departments which have required them for the purposes of economic planning, Europe, for example, having now at least eighty Resources Atlases. This Australian Atlas grew from maps made for State and Commonwealth use, not intended for publication, which by their diversity led to the

recognition of the need for co-ordination and standardization on an Australia-wide basis.

The ten topics illustrated in this first set of maps may perhaps be best subdivided according to subject matter. Five are concerned with the simple mapping of information supplied by the respective authorities—Rainfall, Temperatures, Underground Waters, State and Local Government Areas and Mineral Deposits. The Soils map is a reprint, with a new logically worked out colour scheme, of J. A. Prescott's well-known map published as Bulletin No. 177 by C.S.I.R.O. in 1944. It has a useful accompanying commentary by J. K. Taylor, Chief of the C.S.I.R.O. Division of Soils. The other four maps are also based on information from official sources but involve more digestion of the material; they are those showing Climatic Regions, Agricultural Production, Population Density and Distribution, and Major Developmental Projects.

In all cases great attention has been given to obtaining the best visual results by the skilful use of colour tones, size and shape of symbols, and choice of material; in many cases matters which are not thought suitable for visual representation are dealt with in the Commentary. Visually perhaps the most pleasing is the Soil map, the least successful may be that illustrating Underground Water Resources, in which too much is attempted and as a result the facts are difficult to distinguish. The use of the same base map is of great assistance in comparing one map with another, though as a map it has some deficiencies which should perhaps be attributed to the National Mapping Section, Department of the Interior, which supplied the information. Maps from this source will be looked on as authoritative and it is a pity to find some things appearing which are not only in disagreement with official State geological and other maps but also with publications of the National Mapping Section itself. Some examples of this are: the Lennard River of the West Kimberley is here shown flowing into King Sound instead of into the Meda River; Hamersley is spelt Hammersley, Urandangi is spelt Urandangie, some rivers are marked with "The" as a prefix, The Finke, and The Wilton for example, both of which are marked in the usual way by the National Mapping Office topographical map of the Northern Territory—admittedly these rivers are often referred to in this way, but then so is the Mulligan, here shown as Mulligan River.

The map of Climatic Regions, prepared by officers of the Meteorological Branch, is the least satisfactory and the most ambitious of the three climatic maps in the set. Those showing rainfall and temperature succeed in getting a great deal of useful information, some of which is not readily available, on to each sheet, and that is all that they attempt. The Climatic Regions map uses the facts of rainfall, temperature, etc., to distinguish different types of climate throughout

Australia. The regions adopted do not correspond to those of any of the world climate classifications which have been made by geographers and others, nor is any mention made of the basis of climate classification or of the difficulties inherent in the problem. Though entitled "Climatic Regions" the map shows five climatic types in colour, Sub-Equatorial, Tropical, Sub-Tropical, Dry Continental, and Temperate, sub-divided into five "Geographic types," coastal, highland, inland, interior, and alpine, shown by over-printed hatching, thus distinguishing in all sixteen "climatological divisions." Most of these are further sub-divided, giving twenty-one further divisions. The Commentary gives only a general description of the characteristics of each type and an even vaguer idea of the basis on which boundary lines between them are drawn. The most useful part of the map and of this part of the Commentary is the large number of individual stations for which five items of climatic data are given.

The Agricultural Production map is a useful one which succeeds in giving a great deal of information without becoming overloaded. Percentage of cropped area to total area is shown on a local government or county basis, according to the State. Five categories are illustrated in different shades of green, ranging from 0·1 per cent—1 per cent cultivated land to total area, to 20·43 per cent, based on average acreages from 1945-6 to 1950-1. These small divisions are grouped into statistical divisions for each of which a divided circle shows, in colour, the value of the yield of each crop with more than 4 per cent of the total within that area, for the same years. Five grain crops, two vegetable, three fruit, sugar-cane, hay, and a grouping of "other crops" under each head are shown, seventeen in all. Studied closely this map brings out very well which are the dominating crops of the major areas, but as the circles show the average annual value of crop yields within each statistical division in proportion to its share in the total, some of them are very small and the detail is difficult to distinguish. The map makes clear the great importance of the wheat belt not only for wheat but for nearly all the other most valuable crops, except sugar.

A map of perhaps more ephemeral value but of great interest at present is that showing major developmental projects, public and private "which were under construction or recently completed, authorised or planned in 1953, classified according to the type of project, nature of works, the stage of the construction or planning, the responsibility for the enterprise, and the estimated capital cost."

One of the most difficult achievements is the mapping of population in a country like Australia where density is so low in rural areas and so high in some urban areas. This population map gives a much truer general picture than most previous attempts by showing centres of population down to those of 1,000 inhabitants and indicating the

density of the rest of the area by the use of seven grades of colour, the lowest representing population of 0—0.25 per square mile, the highest over sixteen per square mile. Centres of population are represented by spheres of twenty-seven sizes whose volumes are proportional to the centre of the population range in each category. The large number of small townships, the small number of middle-sized cities, and the sudden jump to the size of the capital cities is well brought out by this method, but the smallness in size of so many of the spheres, especially in those showing centres of under 4,750, where the interval between categories is only 250 or 500, makes it impossible to measure at a glance the size of one small town against another. Figures used are those of the 1947 census; a 1954 version would make an interesting comparison.

Space does not allow the discussion of the other maps and commentaries, of which perhaps the Minerals map is of greatest present interest, bringing together information not only on the location of mineral deposits but also of their mineral groups, economic importance to the Australian economy, and the size of deposit.

M. M. BAYNE

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The World's Food. By M. K. BENNETT. (Harper, New York, 1954.)
Pp.vi + 282. \$4.00.

This survey of the "interrelations of world population, national diets and food potentials" by the Director of the Stanford Food Research Institute can expect a large audience. But the subject is so vast, so diverse, so intricate, that it defeats even so well qualified an expert as Dr. Bennett. Indeed, he does not really attempt it. Professor Stamp made a more courageous effort in his *Land for Tomorrow* which can still be recommended as the best brief survey of world population and food supply. This reviewer found the omission of any reference to the capacity of the world's agricultural land to produce food, a serious one. To Dr. Bennett, as to most economists, considerations of soil, climate and topography, which in large measure determine the pattern of world agriculture, appear to be of relatively minor significance; though there are a few, and for the most part misleading conclusions drawn from these facts of world geography, in a chapter dealing with contrasts in food consumption.

Dr. Bennett is in fact entirely concerned with food consumption, and for almost half of the book with consumption in the U.S.A. Part One summarises the work that has been done on the growth of world population, and Dr. Bennett has no difficulty in disposing of the cynical view that the only way to avoid world catastrophe is to withhold medical and scientific knowledge so that the old checks to popu-

lation growth may still apply. The long Part Two deals with the pattern of food consumption in the U.S.A. and changes that have taken place over the last century as the nation grew richer. Can similar changes be expected in other parts of the world as they too experience increases in per capita incomes? In the concluding section Dr. Bennett provides an answer in part; increases in incomes wherever they have occurred have led to profound changes in consumption patterns; rice and wheat in particular replace other cereals. Dr. Bennett takes issue with the F.A.O. over its estimates of per capita calorie intake and availability, and denies that there is such widespread calorie deficiency. Are we to conclude then that most of the world's population is adequately fed? It is difficult to answer questions like this when the experts are so divided. There are two countries, however, which might suggest an answer to these and other questions. Dr. Bennett and other economists, too, will find a profitable field for enquiry in Malaya and Venezuela as to what happens to consumption patterns when an underdeveloped country starts to develop rapidly.

D. W. FRYER

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United Nations: *The Determinants and Consequences of Population Trends.* (New York, 1953.) Pp. xii + 404. \$4.00.

This volume is the result of a recommendation adopted by the Population Commission of the United Nations that "the Secretary-General should survey the existing scientific studies concerning the relationships between population trends and economic and social factors and prepare a summary of the findings of such studies with special reference to problems of economic development." Part One contains a brief history of world population and a survey of population theories. Part Two contains a detailed account of the main economic and social factors affecting mortality, fertility and migration, together with an analysis of changing age distributions and some forecasts of future population. Part Three covers the economic and social effects of population changes with special reference to the effects of population growth on *per capita* output and to the problem of underdeveloped areas.

Although the volume deals with practically all demographic problems of interest, it would not be correct to call it a treatise on demography. For it is essentially a summary of the findings on these problems by writers of many countries and of many ages. There are well over two thousand titles in the bibliography which have provided the material for the text. There has been no attempt at a critical appraisal of the so-called "scientific findings" of the various writers. The word "scientific" has often been interpreted very generously by the com-

plers. Conflicting views are often recorded side by side with little discussion of their plausibility. Indeed many of the "findings" are little more than untested hypotheses. For example, this is surely the case with the Marxian view that under socialism the population growth will tend to conform to the rate which appears best in the interests of the country under consideration—a view which is stated without comment alongside much more plausible hypotheses about the relation of resources to population (p. 161). Similarly on p. 160 three estimates of world population in about 2000 A.D. are given. These are Notestein's of 1950 based on component projections for major regions, Clark's of 1949 based on a constant 1 per cent per annum rate of growth and Pearl's of 1936 based on a logistic projection. No evaluation of these is made and it is difficult to see why Pearl's was even included in view of its doubtful logic and obvious under-estimation.

In making the above criticisms I am well aware that the volume is intended to be no more than a summary of findings. But it seems to me that the lack of discrimination in compiling some sections of it must detract from its value. Nevertheless the volume will undoubtedly prove a very useful reference book for demographers and economists. It is a comprehensive treatment of the subject except that there is little reference to the pro-natalist policies of the 1930's. This exception no doubt reflects partly the switch in interest to the problems of under-developed areas and partly the view that the rise in the birth rate in "advanced" areas over the past decade or so has rendered pro-natalist policies less necessary.

P. H. KARMEL

University of Adelaide.

Approaches to Economic Development. By NORMAN S. BUCHANAN and HOWARD S. ELLIS. (The Twentieth Century Fund, New York, 1955.) Pp. xiv + 494. Price \$5.00.

In this book the authors have, in considering the problems and policies of economic development, painted a large canvas in clear bold relief. Thus in the rapidly expanding gallery of works on this subject it is likely to stand out as the necessary introduction for all interested students. In this respect, however, it is a great pity there was a publication delay of nearly two years, for in the meantime some very good smaller studies have overcome many of the "third-dimensional" difficulties.

The work itself falls into three parts. The first includes a consideration of demographic and cultural factors and it is pleasing to see in an American study an understanding that *work* as a means of obtaining higher incomes may not be so highly esteemed in all countries.

Part II gauges the progress of economic development from an historical angle and the authors consider economic progress in England, Western Europe, Japan and the U.S.S.R. In Part III, the first chapters consider the priorities of development and the methods of finance. The last chapters include an examination of the position of international trade in development and the particular responsibilities of the U.S.A. in this direction.

Yet there is, even within such a broad sweep, much that is missing. Perhaps the essential criticism lies in the fact that the mechanics of development are not explained. For instance the difficulties associated with utilizing surplus rural labour are not mentioned—and indeed, it seems as though the authors do not expect any when, for example, they imply that existing food consumption would suffice when the under-employed labour is utilized (page 436). This may be true with inflation; but the authors regard inflation with terror. Yet for all its faults deficit financing can speed economic development and especially in an isolated economy.

In Part II the chapters on economic development in Europe seem disappointing compared with those concerning Japan and the U.S.S.R. This may have resulted from giving too much weight to transport and market aspects as against the political and legal features. For instance, other than the early enclosures in England following the acute labour shortages after the Great Plague in 1349, the reasons for the rural contrast in Europe must be sought in non-economic conditions. English and French political and legal development was broadly similar until the sixteenth century, but from then on the English peasant became freer while the French peasant was crushed with feudal reaction.

Perhaps it is a pity the authors do not examine aspects like these instead of concentrating on the physical side of historical development for, as they suggest in Part I, non-economic questions are extremely important, and may provide a better lesson for today's developmental problems.

As the authors suggest, the problem of birth prevention "bristles with difficulties." Yet it is unlikely that any form of birth control could work in poor peasant societies as population growth is caught in a vicious circle. To the individual peasant a larger family means more workers in toil when the proprietor is worn down through ill-nourishment and disease. Later marriages can only spell illegitimacy, while moral restraint is difficult to practise when sex is about the only pleasure for which an immediate outlay is not essential.

The authors may be on dangerous ground in suggesting the Catholic Church as largely responsible for the lack of development in Latin America. Spain, when master of Europe and colonizing nation of these areas, was Catholic, and at the beginning of a process of capital forma-

tion. Perhaps the static equilibrium in Latin America can be explained most satisfactorily through a Toynbee challenge and response analysis, and the continued strength of the particular type of Catholicism in the Spanish world may well be the effect of some alternative lapse. Questions like these are important, for answers can explain whether traditional moves and folklores automatically change with the process of development or make it abortive.

But in relation to the whole work these are minor points. Perhaps in a second edition the authors will include considerations of the more recent studies on the mechanics of development and enlarge the historical section to give greater emphasis to cultural and political points. Chapter 19 gives an excellent general view of economic development for those who have insufficient time to read the whole book—and, as the work has the advantage of being intelligible to the layman, it frequently becomes too laboured and long for the practising economist.

IAN SHANNON

University of Melbourne.

The Indian Land Problem and Legislation. By G. D. PATEL. (N. M. Tripathi, Bombay, 1954.) Pp. xvi + 534. 30/- stg.

The importance attached to land reform as a necessary basis for economic development and rural betterment in under-developed countries is evidenced in a special resolution of the General Assembly of the United Nations (401 (V) November 1950) and in a United Nations Monograph arising out of that resolution.¹ Proposals for land reform have a prominent place in the Indian Five Year Plan, and virtually all the Indian States have introduced legislation. The community projects, which are perhaps the most striking and significant Indian contribution to increasing production and promoting social welfare in village societies, may be prejudiced unless they are effectively underpinned by the removal of the most patent discriminations and exploitation resulting from systems of land tenure.

Dr. Patel's book is a monumental attempt to describe the various and complicated relationships arising out of existing systems of tenure, and evaluate the results of land reform attempts so far made. The book deals with land reforms in Bombay and with all-India reforms including Bhoodan Yagna, consolidation of holdings, tenancy, jagir and zawindari abolition. Not the least of the contributions which he makes is to clarify the meaning of these terms, interpret the various forms as matters of historical growth and assess their socio-economic importance. It is also refreshing to have an objective, non-partisan

1. *Land Reform. Defects in Agrarian Structure as Obstacles to Economic Development.* United Nations, New York, 1951.

treatment. The book brings out the extreme difficulty in converting the complex patchwork of tenure into some sort of orderly system or systems which will work in a society in which, in any case, there is little enough land to go round.

One of the most interesting chapters deals with the Bhoodan Yagna, which Nehru describes as "a strange phenomenon, which cannot be explained by economists or other experts"—certainly strange to Western eyes because it demonstrates an attempt on a large scale to solve a basic economic problem by the application to it of spiritual values. The movement, inspired by Shri Vinoha Bhave, the "spiritual successor of Mahatma Gandhi," and with little opposition save from Communist and Peasants and Workers Parties, appeals to those with land to donate land voluntarily to those without it or with too little. It would appear that some 2,400,000 acres had been donated by early 1954. Dr. Patel gives a sympathetic, if restrained appraisal, and deals in what appears to be an impartial manner with its critics.

Each chapter concludes with a critique of the particular reform under discussion and there is a final over-all assessment. Dr. Patel brings out the striking diversity of the reforms attempted, the problems involved in fixing compensation (including the financial implications), the difficulties in moving ahead of public opinion, the importance of vested interests, and then considers the criteria which should be adopted. While being far from uncritical, he considers that the net effects have been beneficial in removing unnecessary intermediaries, strengthening the position of tenants and generally levelling up "the status of the tillers of the soil in the agricultural ladder." He concludes that land has practically ceased to be a commercial investment for non-agriculturalists, but adds that "it is yet to be ascertained whether the existing level of production has been stepped up and whether the relations between landlords and tenants have become more harmonious, resulting in the solidarity and development of the village economy." One hazards the opinion that a great deal will depend on the extent to which alternative agencies are successfully established to offer the services (such as providing credit) previously provided by landlords, the success of the community projects in improving techniques and promoting community participation in capital formation and other activities, and the extent to which pressure on the land is reduced by the provision of alternative employment opportunities.

Dr. Patel provides highly important documentation on a range of significant attempts to solve intractable problems, and a most useful assessment of the results.

H. BELSHAW

Victoria University College, Wellington.

Migration and Economic Growth—a study of Great Britain and the Atlantic Economy. By BRINLEY THOMAS. No. XII, Economic and Social Studies, The National Institute of Economic and Social Research (Cambridge, 1954.) Pp. xxv + 362. 42/- stg.

Economic historians have long asserted the great influence of the international economy upon Britain's own economic development; first, in the period preceding the Industrial Revolution, when overseas trade quickened the rate of the metropolis' internal metabolism; secondly, when that phase of industrial expansion was over and when British exports were predominantly people and capital rather than goods.

Recently, the more statistically-minded of economic historians have been filling out that thesis. To understand British economic development in the nineteenth century it is necessary now to study not only the homeland itself but its world-wide spheres of influence—its formal and informal empires. Apart from this book of Professor Thomas, the important studies of Cairncross, Lewis, Rostow and others have done much to give this new dimension to our knowledge.

Migration and Economic Growth most closely supplements Cairncross' *Home and Foreign Investment 1870-1913*; in fact, it is a full-length amplification of the argument in a chapter in the last-named volume, namely: periods of active emigration were also periods of heavy borrowing by foreign countries. Thomas' book is, of course, chiefly concerned with the U.S.A. and Canada, although he devotes a chapter to British settlement in the other Dominions—a factor which, like investment, only became really significant in this century.

At once it should be said that this is a well-planned, systematic and thorough piece of work. The author begins by expounding hypotheses, not only his own but also those of his economist predecessors from the mercantilists onwards. His own framework of ideas is implied in the subtitle of this book. Britain and the U.S.A. are seen as a transatlantic economy and the flow of labour, capital and commodities from Britain as inter-regional movements within that economy. This notion could, of course, be extended to the other parts of the world. The validity, or perhaps the distinctiveness, of the concept of the Atlantic economy appears to be partly geographic and partly historic—it was the most important field of international mobility in the last century. The other vital element of the argument is based upon the statistical analysis of the growth of this economy in terms of the minor secular fluctuation, a period of eighteen years approximately.

The major analytical parts of this book elaborates the main thesis in relation to the statistics (described and examined in Part II); the changing institutional context of migration and investment; and the changing structure of society in America, the receiving country. Out

of this emerges Thomas' chief conclusion, a push-pull formulation: periods of heavy emigration from Europe more or less coincided with periods of relatively heavy investment overseas and a high birth-rate with the result that, until the first quarter of this century, there was an inverse relation between the secular cycles of construction in the two countries. When, as in the years 1888-1900 British capitalists were investing at home, migration slackened; again during 1900-1913 when considerable waves of population flowed into the U.S.A., capital flowed too.

This is a suspiciously neat analysis of the economic development of these two major world powers and the author freely admits that the complex relationships between the two countries require further empirical investigation. However, one can see immediately the force of his suggestion that this self-regulating rhythm has been brought to a halt by two factors: U.S.A.'s closed-door policy to migrants since 1921 and 1924, and the inability of Britain to invest abroad so freely as in the past.

This situation raises questions of current policy and this book's last chapter "The Atlantic Economy: Old and New" is a lively-minded contribution to the problem of relaxing the grip of restriction and poverty on the world today. If Britain's position was so pivotal in the last century, that of the U.S.A. is undoubtedly so at the present time.

Professor Thomas' conclusion—a somewhat optimistic one—is to look to it to do what Britain did up to the outbreak of the first world war: "The rhythm of growth in the old Atlantic economy was such that Great Britain spent its income from abroad in one phase on investment overseas and in the next on goods for home consumption, thereby ensuring a remarkable freedom from fundamental disequilibrium. It should not be beyond the wit of man to devise conditions which will enable the new international economy to attain the same object even though conditions are so different." Are the exigencies of America's future existence likely to engender this "sweet reasonableness"?

University of Sydney.

ALAN BIRCH

Retail Trading in Britain 1850-1950. By JAMES B. JEFFREYS. (Cambridge University Press, 1954.) Pp. xviii + 476. 50/- stg.

This study is a further addition to the already significant output of the National Institute of Economic and Social Research in Great Britain and is in effect a complementary volume to Dr. Jeffrey's earlier work, *The Distribution of Consumer's Goods*.

The plan of the book can be simply stated. The first three chapters (pp. 1-120) attempt to summarize the main features of the develop-

ments in retail trading in Britain over the last hundred years. Chapter iv (pp. 121-125) is an introductory chapter to the detailed studies of fifteen different groups of trades which follow in the next fifteen chapters (pp. 126-443). The book is rounded off with a useful index and a number of interesting illustrations.

Dr. Jeffreys does not aim at providing a complete view of retail trading. Although small scale trading is not entirely neglected, the emphasis throughout is heavily in favour of large scale retailing, i.e. the Co-operative Societies, Department Stores and multiple shop retailing. This limitation is of course of some significance, as in Great Britain it has been estimated that small scale retailing is still responsible for approximately two-thirds of the total retail turnover and comprises about four-fifths of the total number of retail establishments. Yet despite this limitation Dr. Jeffreys has produced a valuable book. Gathering information from nearly a thousand firms and organizations in the distributive trades, he has presented for the first time, estimates of the total number of multiple shop branches in the United Kingdom in different years between 1875 and 1950. For the first time too, he has also constructed estimates of the shares of the different types of retailer in the total retail trade and in the retail trade of individual commodities between 1900 and 1950. Indeed one of the features of the book is the continuous attempt to arrive at precise information by measuring the changes in the retail trade. There are ninety-one tables.

The conclusions which emerge although clearly and well stated are nevertheless not surprising. The growth and increasing significance of large scale distribution is strongly underlined. The influence which this growth has had on integrating production and distribution is also stressed. The effects of these movements have been a reduction in the number of middlemen; economies in production by the concentration of demand on a limited number of types of goods; and, in a measure, large-scale retailing has helped stabilize manufacturing prices. Not all trades and commodities have been equally affected but the general pattern obtains.

The book is of more use to the historian than to the economic theorist. Indeed the latter would have to search long and hard for any connection between his work and what the author has written.

J. GINSWICK

University of Sydney.

Principles of Public Finance. By HUGH DALTON. (New Edition, Routledge and Kegan Paul, London, 1954.) Pp. xvi + 255. 10/6 stg.

Dalton's *Principles of Public Finance* have been reprinted twenty-one times so far. This is an indication of the book's deserved popularity. There was a time when teachers of public finance were looking

for text books emphasising the relation between public finance and all other economic aggregates in the Keynesian sense. The outcome of this tendency was a flood of works which treated Keynesian economics rather than public finance. Alvin H. Hansen's works in this field were probably the most successful. What the student now wants, after having grasped the inter-relation of macro-quantities, is a detailed knowledge of the principles of public finance. And Dalton gives him this in an interesting and lucid way unrivalled by any other work on the same subject known to the present writer.

The above remarks apply to the twenty reprints of the first edition. They apply in an even more pronounced degree to the new edition under review. What better luck can a student have but to share the mature knowledge of Dalton, the academic, with the fascinating experience of Dalton, the former Chancellor of the Exchequer? The revised edition is, therefore, highly recommended to any student of public finance. It maintains the simple clarity of the first edition; it has gained in readability by better subdivision of the subject matter (long paragraphs have been cut up into shorter ones); much of the old literary polemics has been cut out; emphasis is laid on the administrative aspects of public finance; and finally, not only has the text been brought up to date, it includes some stimulating discussions of Mr. Dalton's own work at the Treasury. We are, as it were, let into his confidence. The revised edition is the successful rejuvenation of a reliable old friend.

W. ROSENBERG

Canterbury University College, Christchurch.

Economic Activity Analysis. Edited by O. MORGENSTERN. (Wiley, New York, 1954, lithographed.) Pp. xviii + 554. \$6.75.

This symposium is a weighty contribution to the literature on input-output analysis. The volume is in three Parts: I, Economic properties of the input-output system; II, Mathematical properties of linear economic systems; III, Meta-Economics. It seems a pity incidentally that Chicago and Princeton choose to call linear general equilibrium analysis by the name "activity analysis." Input-output, or inter-industry, analysis is a well established label—while, for related developments in the theory of the firm, Dorfman uses the suggestive title "mathematical programming."

Part I will prove a valuable reference work to economists interested in input-output analysis. Students who prefer their Walras pre-digested will find the first essay even more valuable. This essay also contains a summary of the conditions for a unique solution of a general equilibrium system. The second essay is a critique of assumptions in input-output analysis and a review of its applications. The

third essay by Balderston and Whitin discusses the aggregation problem. The importance of this contribution is the greater because the ultimate success of input-output analysis is likely to depend upon the extent to which the complementarity conditions of aggregation can be satisfied. The fourth essay is concerned with the alternative methods of valuation at producer's price or purchaser's price in constructing the input-output table, and the argument is extended to foreign trade. These last two essays are notable for their combination of theoretical enquiry and manipulation of data in the published United States tables.

Part II is an exploration into the mathematical basis of input-output analysis. Most economists will find this heavy fare. Certainly this reviewer found it difficult to see the wood for the trees.

Part III contains two essays. The first is a translation of Karl Menger's earlier work on the logical derivation of the law of diminishing returns. Irrespective of its intrinsic importance, it is difficult to justify the inclusion of this essay in a volume on input-output analysis. The volume concludes with a challenging essay by Morgenstern on experiment and computation which raises issues of the first importance to all economists.

BURGESS CAMERON

Canberra University College.

The Works and Correspondence of David Ricardo. Edited by PIERO SRAFFA with the collaboration of M. H. DOBB. Vol. X, *Biographical Miscellany*. (Cambridge University Press, 1955.) Pp. x + 424. 24/- stg.

It is difficult to conceive that anyone could know Ricardo, even at a distance of more than a century, without liking and admiring him very much as a person, and without wishing to know him better. In this volume, the *Biographical Miscellany* which completes Mr. Sraffa's edition of the *Works and Correspondence*, we are introduced to Ricardo's family—parents, brothers, sisters, and children; we are told all that patient research can uncover about his childhood and education, his marriage and independence; and we learn as much as it is possible to know, given the surviving documentary records, of the way in which "one of Fortune's chief favorites" (the words are his own) operated as a stock-jobber and loan-contractor in war-time Britain. To this is added a selection of private letters which in one way or another throw light on Ricardo's character. The series includes, for example, an early letter from Ricardo to his father-in-law Edward Wilkinson, offering a dispassionate but (for Ricardo) surprisingly hard-hitting analysis of the way in which Wilkinson had alienated the love of his own children, and thereby provoked the family dissensions

then being experienced. Or again, Ricardo's letter to Miss Mary Ann, a young lady who had asked for his autograph, in which he threatens to take a mean advantage of the request by writing to her about rent, profit or currency. Finally, the *Biographical Miscellany* contains the full text of Ricardo's Journal of a Tour of the Continent in 1822. ("... Mrs. Ricardo keeps a keen look out after silk and lace, the two commodities in which she appears prepared to lay out all her money. I am incessantly telling her that I will have no smuggling, and if anything is seized I will be an evidence against her.")

It is good to find that Mr. Sraffa is able to refute completely the accusations made by Professor N. J. Silberling some thirty years ago concerning Ricardo's personal integrity both as an economist and as a member of the Stock Exchange. The charge was that he had tried, by his writing on Bullion in 1809-10, to bring about a fall in the Funds, from which he would benefit as a leader of the "bear-jobbers." Any lingering doubts (if such exist) that this may have contained some substance will be dispelled in the chapter of Volume X headed "A Canard."

In describing the quality of the editor's work, reviewers of earlier volumes have laid claim to most of the superlatives which might otherwise have been inserted at this point. One can only add that the present *Biographical Miscellany* forms the perfect conclusion to a magnificent edition.

G. S. L. TUCKER

University of Melbourne.

SHORT NOTICES

A Theory of Economic-Demographic Development. By HARVEY LEIBENSTEIN. (Princeton University Press and Geoffrey Cumberlege, Oxford University Press, 1954.) Pp. xi + 204. 42/- Aust.

This book is a further important contribution to the study of population problems by the Office of Population Research of Princeton University. Previous studies in the series were mainly empirical. Mr. Leibenstein has attempted an essay in pure theory.

The author develops models not demanding advanced mathematics. Nevertheless at times the argument becomes tedious. In part this arises from over-elaborate expositions of what he proposes to do, in part from methodological digressions which halt the flow of the argument, and at times from rather involved formulations to prove propositions which appear, if not self-evident, relatively simple.

The central problem of the study is exploration of conditions necessary for a break-through from Malthusian conditions. This requires the simultaneous consideration of the effects of changes in economic conditions on the size and composition of a population, and of changes in the size and composition of a population on the economic system and the rate of economic development.

The author begins with an examination of a stable system in demographic and economic equilibrium, and then considers conditions likely to initiate an increase in average real income. This leads to consideration of factors which affect the future course of real income, and therefore cause a return to a Malthusian situation, or an escape from it: the latter requires a destabilizing force of sufficient minimum magnitude (of investment, or innovations, or emigration) for the income raising forces to dominate the income depressing forces. While this happens to be a truism, it does raise important applied problems. For example, the author demonstrates that in some circumstances, a series of strategically placed displacements through time, would be more effective than a single displacement of equal magnitude. A concluding chapter attempts a re-formulation of Optimum Population Theory.

One agrees with the author that "to suggest means of testing propositions developed . . . is, at present, otiose." Nevertheless his essay is a suggestive, rigorous, pioneer attempt, very much needed, to reformulate population theory, bringing in significant "non-economic" variables.

H. BELSHAW

Victoria University College, Wellington.

A Study in the Theory of Economic Evolution. By T. HAAVELMO. (North Holland Publishing Co., Amsterdam, 1954.) Pp. v + 114. 15/- stg.

This monograph explores the possibilities of a general theory of economic evolution, one capable of explaining widely different possibilities of growth and of identifying conditions under which these might occur. Haavelmo studies many variants of a general model using four basic variables—output, population, capital and "know-

how." They are all linked in a production function, but dynamic possibilities are provided by laws of population growth, by an "accumulation function," or by a trend of "know-how."

He succeeds almost too well in finding explanations of divergent paths of growth. Even slight differences in structural parameters or initial conditions can, in time, lead to very different results. Further possibilities of divergence arise from cumulations of "random shocks" in models which allow for stochastic elements or processes. It appears, moreover, in an original chapter on interregional economic relations, that trade may fail to promote greater uniformity in economic development between regions.

These results have an obvious usefulness in drawing attention to the great variety of possible explanations for different regional levels of income and rates of economic progress. They may also prove useful in paving the way for more general or more realistic theories of development. But they are reached by a most dry mathematical argument, whose level of abstraction is such that only the briefest and barest references are made to facts, statistics or other theories of economic evolution. The one exception is a penetrating summary of the Malthusian and Classical dynamics.

C. G. F. SIMKIN

Auckland University College.

The Attack on Big Business. By P. D. GLOVER. (Graduate School of Business Administration, Harvard; Bailey Bros. and Swinfen Ltd., London.) Pp. xvi + 375. 48/- stg.

Big business or the large corporation is one of the main characteristics of the American scene. In spite of the fact that there must be some connection between this form of organisation and the rapid development of the American economy, big business has been under continuous attack from a wide range of critics since its rise to prominence. Professor Glover's aim is to present a survey and study of this vast mass of criticism, in such a form that businessmen, in formulating policies and reaching decisions, might do so in full knowledge of the criticism that is directed against them.

The first part of the survey deals with the attack that has been made on economic grounds. This attack, the author shows, still rests upon the belief in the ideal nature of pure competition—it is concerned with "how *existing* opportunities and techniques are exploited, up to an equilibrium position, not with how new ones are brought into existence and old ones recede." However, much of the hostility towards big business does not stem from the economic but is based on political and social considerations on the one hand and ethical and moral on the other. The features of these attacks are presented in Parts II and III.

In the final part, after a brief critique of the critics the author proceeds to prescriptions for action. He is of the opinion that facts indicate that big business deserves much of the credit for the high standard of living and the unequalled rate of technological advance in America, but to meet the social and moral criticism, he suggests firstly, that businessmen should "broaden their concept of corporate objectives and policies so that recognised corporate goals will more clearly include accomplishments on more than the economic plane;" and

secondly, that businessmen should contribute to a more realistic understanding of the large corporation, by giving research students and educators access to their records in order that they might find out for themselves the true nature of the corporation.

Many would say that these prescriptions do not go far enough. One interesting suggestion, that does go further, is that very large corporations, should have on their board of directors, men who are appointed from outside, as guardians of the public interest.

J.McB. GRANT

University of Adelaide.

The Theory of Collective Bargaining. By W. H. HUTT. (The Free Press, Glencoe, Illinois, 1954.) Pp. 150. \$3.00.

Professor Hutt's book on the *Theory of Collective Bargaining*, first published in 1930, has been republished in the United States of America, this time with preface by Ludwig von Mises.

The essay is still quite topical. For instance, Professor Hutt contends that trade unionism cannot raise the wages share of the national income. This is in line with current thought that, in the United States and the United Kingdom at least, trade unions cannot hope to raise the wages share of the national income in its primary distribution, except perhaps for a short period of time.

Professor Hutt also contends that if one section of workers do gain an increase in real wages, this is at the expense of other sections of workers. The argument is virtually an attack on the device of limitations of numbers and any restrictive device which interferes with the free play of the market. There is considerable quotation of authors writing in the 19th and 20th centuries, and a challenging historical approach, but no concession to the institutional approach.

On page 143 Professor Hutt writes, "It often appears to the writer that the continued appearance of industrial depression in Great Britain is primarily due to the widespread existence of monopolistic bodies on both sides which (quite apart from their having caused equipment and labour to remain idle by policies aiming at 'not spoiling the market') have destroyed the sensitiveness of the price and particularly the wage system."

In his preface to the new American edition, Ludwig von Mises writes (page 9), "On a free labour market there prevails a tendency to make unemployment disappear. Not to interfere with the operation of the labour market is the only effective full employment policy."

These two quotations make it clear why the reader can be pardoned if he gets the impression that these two gentlemen are supporters of laissez-faire and hostile to the institution of trade unionism.

ARNOLD COOK

University of Western Australia.

Economic Survey of Europe in 1954. Prepared by the Research and Planning Division of the United Nations Economic Commission for Europe. (Geneva, 1955.) Pp. xii + 316. 17/6 stg.

This is the eighth annual report reviewing with the aid of a wealth of data current economic trends against the background of recent years. Of seven chapters the first is of particular interest to

trade cycle students. It analyses the cyclical movements in production in Western Europe during 1950 and 1954 and concludes, contrary to the belief expressed in earlier annual surveys, “. . . that the Korean boom was followed, not by a period of general stagnation but rather by a series of distinct though overlapping setbacks . . .”; first the textile slump, then the engineering recession, followed by the steel and coal recession. Western Europe’s balance of payments is analysed in chapter 4, special note being made of this area’s unexpected immunity from adverse repercussions following the industrial recession in the United States.

Chapters 2, 3, and 5 present a useful descriptive survey of recent changes in Eastern Europe and Soviet Russia, notably the “new emphasis” since 1953 on trade with the rest of the world as well as within the group. Finally, special problems of balanced economic development are studied, chapter 6 describing problems of disparities in regional development and industrial location in Europe, taking in chapter 7 France as a case study.

University of New England.

E. A. BOEHM

La Psychologie Economique. By P. L. REYNAUD. With contributions by G. Katona, A. Lauterbach, J. Stoetzel, J. Sauerwein and A. de Vulpian. (Librairie Marcel Rivière et Cie, Paris, 1954.) Pp. 260. 700 frs.

This book consists of four parts: a survey of the psychological foundations of the works of economists during the period 1900-1951 (Reynaud), an essay on “economic psychology” and its tasks (Katona and Lauterbach) a psychological study of consumption (as an economic category) in France (Stoetzel, Sauerwein and Vulpian), and an analytical and critical bibliography.

The first part describes the amazingly variegated pattern of psychological foundations of economic theory. Being descriptive, and covering a large number of writers, it is unfortunately somewhat arid. It gives the reader the disconcerting impression that not all is well with the psychological foundations of Economics: there is too much contradiction, the foundations are too often built on the sand of introspection or daring generalisations.

The second part shows the way to an improvement of this situation: research on behaviour, the making of decisions, motives, etc., as far as affecting economic life. The third is an example of what can be done by the method of “sondages” to shed light on the economic phenomenon called consumption.

The book ought to interest those who are anxious to make Economics more realistic and are interested in the human side of economic life.

Christchurch, N.Z.

C. WESTSTRATE

BOOKS RECEIVED*

A.—AUSTRALIAN AND NEW ZEALAND PUBLICATIONS

BLAINY, GEOFFREY: *The Peaks of Lyell*. (Melbourne University Press, 1954.) Pp. 310. 30/- Aust.

BUTLIN, S. J.: *War Economy 1939-1942—Australia in the War of 1939-1945*. (Australian War Memorial, Canberra: Angus & Robertson, Sydney, 1955.) Pp. 516. 25/- Aust.

COOMBS, H. C.: *The Development of Monetary Policy in Australia*. (University of Queensland Press, Brisbane, 1955.) Pp. 24. 3/- Aust.

The rarity of analytical statements in their own field by Australia's public men gives special interest to this address—the English, Scottish and Australian Bank Limited Research Lecture for 1954—by the Governor of the Commonwealth Bank.

He demonstrates from postwar experience that an effective monetary policy is impossible without an appropriate control of public investment and budget policy. Open market operations, of limited effectiveness in any case under Australian conditions, contributed even less because of the persistent and widespread conviction that interest rates should be kept low. Special Accounts have proved an instrument of great actual and potential value, but both central and trading bank policy would have a surer foundation if a firm convention could be established among banks as to an appropriate relationship between their liquid assets (other than Special Accounts) and total deposits.

GIFFORD, J. K., WOOD, J. VIVIAN, and REITSMA, A. J.: *Australian Banking*, Second Edition. (University of Queensland Press, Brisbane, 1955.) Pp. 275. 52/6 Aust.

SHANNON, IAN: *Rural Industries in the Australian Economy*. (F. W. Cheshire, Melbourne, 1955.) Pp. 150. 22/6 Aust.

B.—OTHER PUBLICATIONS

ALLEN, SHIRLEY W.: *Conserving Natural Resources*. (McGraw-Hill, New York, 1955.) Pp. 347. \$5.50.

BELSHAW, CYRIL S.: *In Search of Wealth*. (American Anthropological Association, Memoir No. 80, 1955.) Pp. 84. \$2.00.

A study of the emergence of commercial operations in the Melanesian society of South-Eastern Papua. The memoir may be obtained from the Department of Anthropology, University of British Columbia, Vancouver.

BERLE, ADOLF A.: *The Twentieth-Century Capitalist Revolution*. (Macmillan, London, 1955.) Pp. 157. 8/6 stg.

BLODGETT, RALPH H.: *Our Expanding Economy*. (Rinehart, New York, 1955.) Pp. 973. \$6.00.

BORENSTEIN, ISRAEL: *Capital and Output Trends in Mining Industries, 1870-1948*. (Occasional Paper No. 45, National Bureau of Economic Research, New York, 1954.) Pp. 81. \$1.00.

Two of the main findings of this careful statistical study are (1) that from 1880 to 1910-19 aggregate production of minerals grew faster than national product; since then the reverse has been true (2) in each mining industry, in most cases round about 1919, the previous characteristic, that an ever-increasing stock of capital was required to extract a dollar's worth of mineral, was reversed.

CALCATERRA, ERCOLE: *Il Rapporto fra i Livelli Nazionali dei Prezzi*. (A. Giuffrè, Milan, 1953.) Pp. 200. Lire 800.

CALCATERRA, ERCOLE: *L'Agricoltura nello Sviluppo delle Economie Arretrate*. (A. Giuffrè, Milan, 1955.) Pp. 153. Lire 800.

CHAMBERLAIN, NEIL W.: *A General Theory of Economic Process*. (Harper and Brothers, New York, 1955.) Pp. 370. \$5.00.

* Acknowledgment of publications does not guarantee review.

- CHAMBER OF COMMERCE OF THE UNITED STATES: *Business and Economic Forecasting*. (Chamber of Commerce of the United States, Washington, 1954.) Pp. 30. 50 cents.
- COLM, GERHARD: *Essays in Public Finance and Fiscal Policy*. (Oxford University Press, New York; Geoffrey Cumberlege, London, 1955.) Pp. 375. 38/- stg.
- COLUMBIA UNIVERSITY, Graduate School of Business: *United States Agriculture: Perspectives and Prospects*. (Columbia University, 1955.) Pp. 124. Research reports and background papers prepared for the use of participants in the seventh American Assembly, May 1955.
- DONALD, M. B.: *Elizabethan Copper: The History of the Company of Mines Royal, 1568-1605*. (Pergamon Press, London, 1955.) Pp. 405. £3 stg.
- DUPRIEZ, LEON H. (ed.): *Economic Progress*. Papers and Proceedings of a Round Table held by the International Economic Association. (Institut de Recherches Economiques et Sociales, Louvain, 1955.) Pp. 574. No price stated.
- EASTHAM, J. K. (ed.): *Dundee Economic Essays*. (The Economists' Bookshop, London, 1955.) Pp. 103. No price stated.
This volume contains six specially-written essays: "Wicksell's Principle in the Distribution of Taxation," by Professor Duncan Black; "The Postal Monopoly in Great Britain: an historical survey," by Professor R. H. Coase; "A Redefinition of the Boundary between Interest and Profit Theories," by J. K. Eastham; "Professor Hayek's Contribution to Trade Cycle Theory," by J. C. Gilbert; "Scottish Trade with the Baltic, 1550-1650," by S. G. E. Lythe; "Advertising Costs in Monopolistic Competition," by T. H. Silcock.
- FEROLDI, FRANCO: *Formazione del Capitale e Politica Creditizia nello Sviluppo Economico*. (A. Giuffrè, Milan, 1954.) Pp. 118. Lire 600.
- FISHER, IRVING: *The Theory of Interest*. Reprints of Economic Classics. (Kelley and Millman, New York, 1954.) Pp. 566. \$8.50.
- FOGARTY, MICHAEL P.: *Economic Control*. (Routledge and Kegan Paul, London, 1955.) Pp. 324. 21/- stg.
- FOOD AND AGRICULTURE ORGANIZATION: *Uses of Agricultural Surpluses to Finance Economic Development in Under-developed Countries*. A Pilot Study in India. (F.A.O., Rome, 1955.) Pp. 65. No price stated.
- FORD, P., and FORD, G.: *A Guide to Parliamentary Papers*. (Blackwell, Oxford, 1955.) Pp. 79. 7/6 stg.
This extremely useful guide is essential for libraries, and for teachers and research workers who need to use British Parliamentary papers, i.e. for most people concerned with Australian history. Three lucid chapters—What They Are, How to Find Them, How to Use Them—lead the reader through a bibliographical labyrinth which is one of the richest historical sources in print.
- HALL, N. DUNCAN: *North American Supply* (History of the Second World War, United Kingdom Civil Series.) (Her Majesty's Stationery Office and Longmans Green, London, 1955.) Pp. 559. 35/- stg.
- HAMPEL, GUSTAV: *Die Bedeutung der Sozialpolitik für die Europäische Integration*. (Institut für Weltwirtschaft, Kiel, 1955.) Pp. 169. D.M. 13.
This study (No. 33 in the Kiel series) includes a useful comparative table, 72 pages long, showing social security provisions in twelve European countries.
- HICKMAN, BERT G.: *The Korean War and United States Economic Activity, 1950-1952*. (National Bureau of Economic Research, New York, 1955.) Pp. 64. \$.75.
- HOAGLAND, HENRY E.: *Real Estate Principles*. (Third edition, McGraw-Hill, New York, 1955.) Pp. 538. \$6.50.
- HODGMAN, DONALD R.: *Soviet Industrial Production 1928-1951*. (Harvard University Press and Geoffrey Cumberlege, London, 1954.) Pp. 241. 78/9 Aust.
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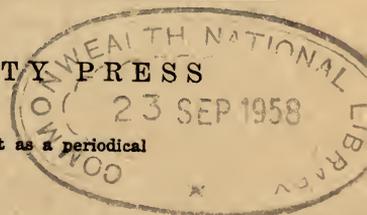
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No. 68

THE AUSTRALIAN ECONOMY, JULY 1958

1. *Recent Trends*

A short while ago a paper on the Australian economic situation would have opened with a discussion about the factors affecting the inflationary situation or perhaps an explanation of how any redressment of the balance of payment deficit would add to the inflationary pressure. In these circumstances statistics of unemployment were a secondary consideration. Today we are no longer in this position and while unemployment statistics do not tell the whole story they are the first piece of information to be studied. Over the past two years the balance of weight on the economic see-saw has slowly shifted. From an inflationary situation the economy moved for some months to a delicate balance and although economic policy has been designed to maintain this position there are signs that the see-saw has continued past the horizontal position and is beginning to dip gently in the opposite direction.

Several factors have contributed to this situation. As the full impact of the supplementary budget of March 1956 was gradually felt by the economy, demand slowly decreased to a level that could be accommodated by the supply of goods and services available under the tightened import conditions. But even so it was by no means certain that this situation would continue. Wool prices rose steadily throughout the 1956/7 season. The increase in export receipts together with the reduction in import payments produced a balance of payments surplus and a substantial rise in our international reserves.

The rise in wool incomes might well have led to increased expenditure. Indeed a slight strengthening of the labour market took place around the middle of 1957¹ while industrial production expanded after the steady contraction of the previous twelve months. The stage seemed set for expansion. An expansion which might well have been met by a relaxation of import restrictions. Everything depended upon the price of wool in the 1957/8 season.

The answer was not long coming. Wool prices sagged at the opening sales and continued to fall throughout the season. Neither the expected revival of inflationary pressure nor the hoped for relief from import restrictions materialized. The balance of payments steadily weakened. Nevertheless industrial production steadied and the level of employment continued to grow. At the same time industrial capacity expanded while unemployment became more prevalent.

1. See H. W. Arndt, "The Australian Economy", *Economic Record*, December 1957, p. 302.

2. *Employment*

The position with regard to employment and unemployment is shown in Table I. The number of persons registered for employment with the Commonwealth Employment Service during the first half of 1958 was considerably in excess of the number registered in the same period in 1957. In a similar manner the number of vacancies registered

TABLE I
Employment

| Date | Persons Seeking Employment | Registered Vacancies | Excess of Persons Seeking Employment Over Vacancies | Number on Unemployment Benefit | Civilian Employment |
|-------------------|----------------------------|----------------------|---|--------------------------------|---------------------|
| | '000 | '000 | '000 | '000 | '000 |
| <i>1957</i> | | | | | |
| January | 52.6 | 30.1 | 22.5 | 15.7 | 2,853 |
| February | 49.5 | 24.3 | 25.2 | 13.1 | 2,871 |
| March | 46.5 | 21.7 | 24.8 | 13.1 | 2,875 |
| April | 46.1 | 20.7 | 25.4 | 15.5 | 2,862 |
| May | 51.1 | 19.8 | 31.3 | 15.3 | 2,867 |
| June | 52.2 | 18.4 | 33.8 | 18.1 | 2,865 |
| July | 53.1 | 18.8 | 34.3 | 20.3 | 2,860 |
| August | 51.3 | 20.8 | 30.5 | 20.2 | 2,857 |
| September | 48.7 | 22.1 | 26.6 | 19.0 | 2,863 |
| October | 47.1 | 25.1 | 22.0 | 17.9 | 2,867 |
| November | 51.6 | 25.3 | 26.3 | 19.8 | 2,873 |
| December | 58.9 | 24.5 | 34.4 | 26.0 | 2,871 |
| <i>1958</i> | | | | | |
| January | 74.8 | 25.9 | 48.8 | 29.9 | 2,874 |
| February | 70.0 | 20.7 | 49.3 | 26.9 | 2,885 |
| March | 64.4 | 19.2 | 45.2 | 24.5 | 2,892 |
| April | 67.4 | 18.0 | 49.4 | 27.7 | 2,889 |
| May | 66.0 | 17.4 | 48.6 | 27.3 | 2,889 |
| June | 67.1 | 15.9 | 51.2 | 29.4 | 2,887 |
| July | 65.9 | 16.5 | 49.4 | 29.9 | — |

Sources: Commonwealth Statistician, *Monthly Bulletin of Employment Statistics*.

Dept. of Labour and National Service, *Monthly Review of Employment Situation*.

during the first half of 1958 was well below the number registered in the same period in 1957. As one measure of the extent of unemployment it is worthwhile looking at the difference between these two series. The excess of persons seeking employment over registered vacancies shows a strong rising trend of unemployment in 1958, particularly when each month is compared with the corresponding month of the preceding year. The same movement is present in the number of persons receiving unemployment benefit.²

2. If the reader is interested to graph these series the underlying trend can be clearly seen against the seasonal movement. Unfortunately the seasonal pattern of the last two years is sufficiently different from that during the near zero unemployment era to make it exceedingly difficult to construct a satisfactory deseasonalized series.

Against this picture of steadily increasing unemployment can be seen a slow but consistent expansion of employment. During the twelve months ended June 1958 civilian employment increased by 21,200 persons. Manufacturing absorbed 50 per cent of this increase while Commerce took about 35 per cent. The increase in Commerce was almost entirely in Retail Trade. Employment in Building and Construction and transport fell sharply over the year as a whole but picked up during the last four months. After showing a strong increase up to March 1958 employment in Manufacturing steadied and then showed a slight drop. This was largely seasonal and the next few months should show increases in manufacturing employment—at least up to Christmas 1958.

TABLE II
Changes in Civilian Employment (a)

| Industrial Group | June 1957 to June 1958 | Feb. 1958 to June 1958 |
|-------------------------------------|------------------------------|------------------------------|
| | '000 | '000 |
| Mining and quarrying | - 4.8 | - 1.5 |
| Manufacturing | + 10.2 | - 3.7 |
| Building and construction | - 4.8 | + 3.4 |
| Transport | - 3.1 | + 2.6 |
| Communication | + 1.7 | - 0.5 |
| Property and finance | + 3.9 | + 0.3 |
| Commerce | + 7.6 | - 2.2 |
| Health | + 3.1 | + 1.3 |
| Education | + 4.2 | + 1.7 |
| Other | + 3.2 | - 0.6 |
| | + 21.2 | + 0.8 |

(a) Excluding wage earners in rural industries and private domestic service.

Source: Commonwealth Statistician, *Employment Statistics*.

Exactly what the overall rate of unemployment is at present is difficult to say. The excess of persons seeking employment over registered vacancies as a percentage of the wage and salary earners in civilian employment is one convenient estimate. This calculation yields an unemployment rate of 1.8 per cent. However, during the same period that civilian employment increased by 21,200 or 0.7 per cent, the proportion of persons seeking employment to civilian employment rose by 0.5 per cent. Unfortunately these percentages do not account for the increase of approximately 2 per cent which should have taken place in the work force from migration and natural increase.³ Accordingly the figure of 1.8 per cent is probably a slight under-estimate of the state of unemployment.

The real fear, however, arises not from the absolute level of unemployment but from the fact that the upward trend of unemploy-

3. The failure of the official statistics on employment and unemployment to add up to the increase in the work force leads to the obvious conclusion that errors probably exist in the statistics of civilian employment or unemployment or both.

ment shows no sign of abatement and if ignored could have important repercussions on our economic future. In an economy which has been geared to development any serious set back to investment could impair the rate of progress for a considerable period of time.

3. Price Stability and the Economic Tempo

There has been a great deal of discussion in the post-war period regarding the difficulty of achieving price stability while maintaining a policy of full employment. It seems to have been generally accepted that if full employment is defined as a situation where the number of people seeking employment is exactly equal to the number of jobs

TABLE III
Prices and Wages
(Percentage change on preceding quarter)

| Period | Retail Prices (a) | Wholesale Prices (b) | Import Prices | Export Prices (c) | Nominal Wages Rates | Average Weekly Earnings (d) |
|---------------------------------------|-------------------|----------------------|---------------|-------------------|---------------------|-----------------------------|
| <i>1956/7</i> | | | | | | |
| September | +1.9 | +3.1 | +1.0 | +7.5 | +1.3 | +2.2 |
| December | +0.9 | +0.3 | +1.0 | +1.7 | +1.3 | +1.4 |
| March | +0.9 | -0.3 | -0 | +0.9 | -0.2 | +0.2 |
| June | +0.9 | -0.8 | +1.0 | +0.4 | +1.2 | +0.4 |
| <i>1957/8</i> | | | | | | |
| September | +0.5 | -1.1 | +1.9 | -5.9 | +0.3 | +1.8 |
| December | 0 | -1.7 | +0.7 | -13.3 | 0 | +0.7 |
| March | +0.7 | -0.6 | -0.7 | -3.6 | 0 | — |
| June | +0.7 | -2.8 | — | -3.8 | +1.3 | — |
| (Percentage change on preceding June) | | | | | | |
| June, 1957 | +4.7 | +2.2 | +2.9 | +10.5 | +3.8 | +4.3 |
| June, 1958 | +1.9 | -6.0 | — | -24.3 | +1.6 | — |

(a) Interim price index excluding potatoes and onions.

(b) Index of basic materials.

(c) Excluding gold.

(d) Per adult male seasonally adjusted.

Sources: Commonwealth Statistician, *Monthly Review of Business Statistics*.

Commonwealth Statistician, *Monthly Bulletin of Employment Statistics*.

Commonwealth Bank, *Statistical Bulletin*.

available,⁴ it is impossible to overcome the upward pressure upon wages and prices. Just what degree of unemployment is required to remove this pressure has been the subject of hot debate. Clearly it differs among countries and at different periods of time but the effect of the recent unemployment hints at an answer for Australia.

The changes that have taken place in prices and wages during the last two years are shown in Table III. Retail prices increased by only

4. This would roughly correspond to the equality of persons seeking employment with registered vacancies in Table I, although regional disparities would have to be taken into account.

1.9 per cent between June 1957 and June 1958 as compared with 4.7 per cent over the preceding twelve months. Part of the relative stability is due to the fall in the price of basic materials. The changes in wholesale prices reflect this fall. Part is also due to wage policy. No change took place in the basic wage between May 1957 and May 1958 and the increases which did take place were both reasonably small.

The decisions of the Commonwealth Conciliation and Arbitration Commission were undoubtedly influenced by the balance of payments but this is only one side of the picture. If excess demand had been present there would have been a tendency for average weekly earnings to have risen without any need for increased award rates to push them up. In fact the movement in average weekly earnings is consistent with a small push from increased wage rates and almost no pull from demand. The increase in the basic wage in May 1957 seems to have passed into average earnings with a slight lag. It remains to be seen whether the slightly higher degree of unemployment has had any dampening effect on the way in which the increase in May 1958 has been passed into average earnings or whether some part might have been absorbed in over award payments.

In addition to retarding the rate of increase of average earnings so that they follow award wages fairly closely the removal of excess demand, with its associated price stability, has also had the effect of reducing the pressure for a wage push on the award rates themselves. The Commonwealth Arbitration Commission and State Wages Boards seem to have been able to hold wage rates fairly constant for long periods and finally raise them by small amounts without any strong union resistance and outcry.

But what has been the effect of the stability of prices and wages on productivity? Two opposing claims have been made in recent years. On the one hand it has been suggested that excess demand is a prerequisite to any rise in productivity. Industry, it is asserted, is stimulated by constantly rising prices and needs the pressure of excess demand to keep it in top gear. Any withdrawal of this pressure is likely to have adverse reactions on productivity with the attendant risks of stagnation and unemployment.

The opposite claim suggests that apart from the need to restrain price increases for balance of payments purposes there is reason to believe the removal of excess demand and the resulting increase in competition would step up productivity. Continuous inflationary pressure is likely to breed a little slackness which would soon be eliminated if excess demand were removed. It is true that a period of readjustment might be necessary in which the total level of output would drop slightly as some overtime disappeared, but it is argued, this would be a once for all drop and from then on output would proceed to rise steadily again. Further, the new rate of growth of output might even be higher than that taking place before the readjustment. This would be so if the removal of excess demand eliminated a few high cost

producers and led to a general tightening of efficiency on the side of both management and labour.

The first view has received a certain amount of support from the economic conditions which have prevailed in the United Kingdom since 1955 when monetary controls were applied to overcome inflations. Industrial production in 1956 was 0·5 per cent lower than in 1955 but rose by 1·5 per cent between 1956 and 1957. These rates compare with an average increase in industrial production of 7 per cent per annum between 1952 and 1955. Employment in manufacturing rose by 0·5 per cent between 1955 and 1956 and was constant between 1956 and 1957.

On the other hand the Australian economy seems to provide support for the second point of view. It is still a little early to see the complete picture and unfortunately no official indexes of industrial production or of real domestic product are available to assist analyses of this type. Nevertheless a glance at the movement of industrial production of most commodities over the first eleven months of 1957/8⁵ is sufficient to show that the anti-inflationary measures applied during 1956 have not brought the level of output to a halt. The Australian and New Zealand Bank's Index of Factory Production summarizes these figures into the startling result that factory production in the first eleven months of 1957/8 was 8 per cent higher than in 1956/7. Factory production over the two previous years increased by 5 and 4 per cent respectively. Since the increase in factory employment in 1957/8 was approximately 1·5 per cent, a rough estimate of the increase in factory production per man would be over 6 per cent. For 1956/7 the increase in factory production per man was around 3 per cent.

4. Recent Economic Trends

Some of the factors contributing to the rise in production are shown in Tables IV, V and VI.

TABLE IV
Domestic Supplies

| Source | 1955/6 | 1956/7 | 1957/8 | Change 1955/6- 1956/7 | Change 1956/7- 1957/8 |
|-----------------------------|--------|--------|--------|-----------------------------|-----------------------------|
| | £m. | £m. | £m. | £m. | £m. |
| Gross National Product— | | | | | |
| Non-farm (a) | 4,859 | 5,201 | 5,460 | + 342 | + 259 |
| Farm | 438 | 535 | 359 | + 97 | - 176 |
| Total | 5,297 | 5,736 | 5,819 | + 439 | + 83 |
| Imports, etc. | 1,022 | 914 | 1,019 | - 108 | + 105 |
| Less Exports, etc. | 879 | 1,103 | 934 | - 224 | + 169 |
| Domestic Supplies | 5,440 | 5,547 | 5,904 | + 107 | + 357 |

(a) Unfortunately it is not possible to remove farm wages from this item.

Source: *National Income and Expenditure 1957-58*.

5. These figures can be seen in the Commonwealth Statistician's *Monthly Bulletin of Production Statistics*, July 1958.

TABLE V
Absorption of Domestic Supplies

| Expenditure | 1955/6 | 1956/7 | 1957/8 | Change 1955/6- 1956/7 | Change 1956/7- 1957/8 |
|----------------------------------|--------|--------|--------|-----------------------------|-----------------------------|
| | £m. | £m. | £m. | £m. | £m. |
| Personal consumption (a) | 3,358 | 3,560 | 3,820 | + 202 | + 260 |
| Gross private investment— | | | | | |
| Fixed capital equipment | 939 | 948 | 1,019 | + 9 | + 71 |
| Non-farm stocks | 130 | 60 | 50 | - 70 | - 10 |
| Farm stocks | 24 | - 30 | -40 | - 54 | - 10 |
| Public authorities | 989 | 1,009 | 1,055 | + 20 | + 46 |
| Gross Domestic Expenditure . . | 5,440 | 5,547 | 5,904 | + 107 | + 357 |

(a) Includes financial enterprises.

Gross domestic expenditure increased by £357 m. or 6·5 per cent in 1957/8 compared with an increase of £107 m. or 2 per cent in 1956/7. Allowing for price changes there was a rise of approximately 4 per cent in real expenditure in 1957/8 and a fall of 3·4 per cent in 1956/7. The increase in domestic expenditure in 1957/8 was met partly from an expansion of domestic production and partly from an expansion of imports. The value of production in the non-farm sector of the economy rose by £259 m. or 5 per cent.⁶ Using the interim retail price index as a deflator the real increase in non-farm production in 1957/8 was 2·6 per cent. For 1956/7 the comparable figure was 1·5 per cent. Taking account of changes in the work force the increase in non-farm product per head was about 2 per cent in 1957/8 and 1 per cent in 1956/7.

How do these figures compare with the increases in factory production indicated by the Australia and New Zealand Bank's index? As no industrial breakdown of the gross national product is available it is difficult to assess the proportion of gross non-farm product contributed by manufacturing with any degree of precision. However, we know that about one-third of the work force, excluding rural workers, is engaged in manufacturing activities and less than 50 per cent of the wages and salaries and company income in 1956/7 originated in manufacturing. Accordingly, as the increase in productivity in the service industries is probably negligible it seems reasonable to assume that manufacturing output per head is at least twice the total non-farm output per head. This would yield increases of at least 4 per cent and 2 per cent for 1957/8 and 1956/7 respectively. These figures bear the same relative relationship as the Australia and New Zealand Bank's estimates in the previous section but they are slightly lower in absolute terms. However, in view of the roughness of the statistical

6. Farm wages are caught up in non-farm product so that farm product is really only the income of farmers (excluding pastoral companies). In so far as falling farm incomes led to a lower farm wage bill in 1957/8, the percentage rise in non-farm product is an under-estimate. Current company reports also indicate that company incomes in 1957/8 may prove to be under-estimated.

calculations the two sets of estimates would appear to be consistent, so that further support is given to the thesis that economic stability might have given a fillip to productivity in Australia.⁷

Unfortunately the external picture is not so bright. The movements of export and import prices (see Table III) indicate that a strong deterioration has taken place in the terms of trade. In the first nine months of 1957/8 there was a 13 per cent fall in the terms of trade. The effect of this adverse movement in external productivity has been to reduce real national product by about the same amount as internal productivity has increased it. Our overall progress in 1957/8 has accordingly been negligible. The major impact of the reduction in external productivity has fallen on the farmer. To the extent, however, that non-farm incomes have lagged behind the improvement in internal productivity part of the burden has been absorbed by the non-farm sector.

TABLE VI
Indicators of Business Activity
(Percentage change on corresponding quarter of preceding year)

| Period | Retail Sales | Motor Vehicle Registrations | Building Commencements | | | H.P. Balances Outstanding | Bank Advances |
|---------------|--------------|-----------------------------|------------------------|--------|--------|---------------------------|---------------|
| | | | Houses and Flats | | Other | | |
| | | | No. | Value | Value | | |
| | % | % | % | % | % | % | % |
| <i>1956/7</i> | | | | | | | |
| September | + 3.9 | - 19.1 | - 15.2 | - 7.1 | + 9.2 | + 11.0 | - 4.8 |
| December | + 4.1 | - 12.7 | - 8.8 | - 6.1 | - 5.2 | + 9.1 | - 5.4 |
| March | + 4.2 | - 9.1 | - 1.9 | + 0.5 | - 17.4 | + 9.5 | - 5.5 |
| June | + 4.5 | + 3.0 | + 11.0 | + 14.1 | - 18.0 | + 11.0 | - 3.0 |
| <i>1957/8</i> | | | | | | | |
| September | + 5.6 | + 3.1 | + 12.3 | + 16.5 | - 15.3 | + 11.5 | - 2.8 |
| December | + 5.6 | + 12.8 | + 0.3 | + 4.3 | - 8.1 | + 14.7 | + 0.1 |
| March | + 5.7 | + 13.9 | + 4.4 | + 7.7 | + 9.3 | + 20.0 | + 3.8 |
| June | — | + 14.4 | + 3.3 | — | — | + 24.5 | + 8.8 |

Source: Commonwealth Statistician, *Monthly Review of Business Statistics*.

Despite the greater stability in retail prices in 1957/8 compared with 1956/7 retail sales continued to expand. Whereas the volume of sales in 1956/7 compared with the preceding year was approximately the same there was an increase of 3 to 4 per cent in volume in 1957/8. Professor Arndt has outlined the resemblance between 1956/7 and 1952/3 as years of domestic recession following boom years and balance of payments difficulties.⁸ The data of Table V indicate that real consumption per head fell 2 per cent in 1956/7 and recovered strongly in 1957/8 with an increase of approximately 3 per cent.

7. This is far from the final word on the Australian situation but it should be noted that it would be very upsetting to find that the United States of America was the only country which responded when excess demand was removed.

8. H. W. Arndt, "The Australian Economy", *Economic Record*, December 1957, pp. 287-290.

The year 1957/8 has therefore produced some apparently curious movements. While unemployment has been gradually increasing consumer expenditure has also shown a steady expansion.⁹ Perhaps consumer expenditure is going to prove just as resilient in post-war Australia as in the United States of America! Rising productivity has undoubtedly contributed to this result but it is difficult to avoid the conclusion that hire purchase has played an important role.

TABLE VII
Amounts Financed Under Hire Purchase Agreements
(Percentage change on corresponding quarter of preceding year)

| Period | Motor Vehicles, Tractors, Etc. | Plant and Machinery | Household and Personal Goods | Total |
|-------------------|-----------------------------------|------------------------|---------------------------------|--------|
| <i>1956/7</i> | | | | |
| September | + 5.9 | + 36.3 | - 15.8 | + 1.3 |
| December | + 9.5 | + 4.9 | - 8.1 | + 4.7 |
| March | + 14.8 | + 20.5 | + 3.8 | + 12.1 |
| June | + 8.4 | + 24.3 | + 32.9 | + 14.5 |
| <i>1957/8</i> | | | | |
| September | + 0.7 | - 8.1 | + 69.0 | + 12.4 |
| December | + 12.5 | + 25.8 | + 55.2 | + 22.8 |
| March | + 20.5 | + 11.7 | + 61.2 | + 30.3 |
| June | + 26.3 | + 9.8 | + 50.3 | + 31.5 |

Source: Commonwealth Statistician, *Monthly Review of Business Statistics*.

The increase in outstanding balances of hire purchase finance businesses in 1957/8 was about 10 per cent greater than the increase in the preceding two years combined. While motor vehicles have been well supported an increasing share of the finance available has gone to household and personal goods. There seems little doubt that television has had the major influence on expenditure in this direction.

While it must be admitted that the expansion of hire purchase finance has assisted the growth of production during the past year it is nevertheless disquieting to find consumer expenditure expanding so lustily at a time when more expenditure should be undertaken on capital formation, both public and private, and further, that there is no simple way of controlling hire purchase if the need arises. All States must be concerned at the flow of funds into hire purchase companies at the expense of their public works. It would seem therefore that the time has arrived for co-operation between States in the direction of enforcing minimum deposit ratios, possibly combined with a maximum period of payment.

In addition concern has been expressed that something should be done to protect the consumer both on the borrowing and lending side.

9. It is interesting to observe that twelve months ago nearly all the complaints about unemployment came from employers and not trade unions. Labour did not seem to lose confidence as quickly as management and continued to spend. The result of this spending has been the gradual cessation of complaints about unemployment from employers while labour is only now beginning to be concerned.

There is clearly a need to ensure the public has adequate information about the financial strength of companies to which they are lending money. Legislation with regard to the issue of prospectuses and a tightening of control by Stock Exchanges could cover this matter. It should not be difficult also to frame legislation to protect borrowers by ensuring the conditions under which hire purchase finance is provided are clearly set out and that repossessions are controlled.

5. Balance of Payments

Despite the steady decrease in the price of wool and metals over the past year the fall in international reserves between June 1957 and June 1958 amounted to only £42 m. Earlier fears of a somewhat larger decline in international reserves were based mainly upon the assumption that imports would be slightly higher and the capital inflow slightly lower than the levels which actually obtained. The inflow of private funds was the same in 1957/8 as in 1956/7, but net receipts from government loans were £13 m. in 1957/8 compared with net payments of £3 m. in 1956/7.

TABLE VIII
Balance of Payments
(£A million)

| | 1955/6 | 1956/7 | 1957/8 |
|--|--------|--------|--------|
| <i>Current Account—</i> | | | |
| Exports f.o.b. | 772 | 978 | 814 |
| Imports f.o.b. | — 819 | — 718 | — 791 |
| Trade balance | — 47 | 260 | 23 |
| Invisibles (net) | — 190 | — 167 | — 201 |
| Current account balance | — 237 | 93 | — 178 |
| <i>Capital Items—</i> | | | |
| Public and private borrowing | 164 | 119 | 136 |
| Movement in international reserves | — 73 | 212 | — 42 |

Source: Commonwealth Statistician, *The Australian Balance of Payments*, 1953/4 to 1957/8.

Imports during 1957/8 failed to reach the target rate by £20 m. Although import restrictions were relaxed slightly in the second quarter of 1957/8 so as to allow the annual flow of imports to rise from £775 m. to £810 m., it is interesting to observe there was no change in the quarterly import rate. The quarterly flow of imports during 1957/8 compared with 1956/7 was as follows:

| | 1956/7 | 1957/8 |
|-----------------------------|--------|--------|
| | £m. | £m. |
| September quarter | 190 | 196 |
| December „ | 169 | 198 |
| March „ | 172 | 199 |
| June „ | 186 | 197 |

At the present level of import restrictions it would seem that a regular flow of imports should be maintained during the ensuing year and the total should not exceed £800 m. As there have been few complaints about import restrictions in recent months it might even be wondered whether they are really pinching very much, and what the effect would be if they were lifted. The disinflationary economic policy initiated by the supplementary budget of March 1956 has clearly had a marked effect on the demand for imports. If our export position were a little stronger it would certainly be worthwhile trying to remove the restrictions but it might not be wise to risk a run of imports now.

Owing to drought conditions the wool clip in 1958/9 will be about 3 per cent down on the 1957/8 clip. There is reason to believe wool prices will not sag any further but exactly when and by how much they are likely to recover is difficult to judge. Assuming the closing prices for wool are maintained during the coming year¹⁰ the wool cheque could drop by £60 m. The outlook for wheat is very bright. The 1958/9 crop should reach and even surpass the post-war average of 160 m. bushels. Production in 1957/8 was 96 m. bushels. The effect would be to raise the export receipts from wheat by approximately £20 m.¹¹ If metal prices continue to hold and even rise very slightly, butter output improves, and industrial exports expand very slightly under the impetus of the recently instituted export consultative committee the drop in total exports could be £30 m. or less. A forecast of the balance of payments for 1958/9 would accordingly be as follows:¹²

| | £Am. |
|--------------------------|-------|
| Exports f.o.b. | 785 |
| Imports f.o.b. | 800 |
| | <hr/> |
| Trade balance | — 15 |
| Invisibles (net) | — 210 |
| | <hr/> |
| Current account balance | — 225 |
| | <hr/> |

With an inflow of capital around £125 m. the fall in international reserves in 1958/9 would be of the order of £100 m. If the inflow of capital should drop to £100 m. the fall in international reserves would be around £125 m. With the level of international reserves at 30th June 1958 standing at £525 m. the deficit on the balance of payments for the coming year can therefore be faced with a certain degree of confidence. The recent announcement by the Minister for Trade that

10. The price used is the average for April-May 1958 of 54 pence, which is slightly below the closing price in June. This compares with an average of 62.45 pence for the whole of 1957/8 season.

11. Assuming the 1958/9 crop reaches 180 m. bushels and that 80 m. bushels are consumed at home we have 100 m. bushels of wheat available for export in 1958/9 against 63 m. bushels in 1957/8. If stocks are increased by 10 m. bushels, exports could rise by 50 per cent to yield an additional £20 m.

12. The balance of payments forecast may prove to be on the pessimistic side. Reports at present being received from U.S.A. are unanimous in declaring that the downward movement has been arrested. The strength of the upturn is still questionable but some assistance to export prices could be provided during the year.

import restrictions will not be altered seems to be a sound decision at this stage of the year.

6. *Economic Prospects and Policy*

Although the consequences of the prospective deficit in the balance of payments are not alarming when viewed against our international reserves it is nevertheless essential that this imbalance should be considered in the wider economic context of rising unemployment and stability of wages and prices, and the longer term movements of these factors. The rise in internal productivity and the relative stability of wages in 1957/8 has done much to improve our ability to compete with imports. Unfortunately falling export prices have more than offset any advantages gained on the import side. In the short period our international reserves can be used to take the strain, but if export prices do not recover, imports will eventually have to be reduced. In the meantime if no change takes place in external productivity, and prices in the rest of the world are reasonably stable, increases in wages cannot exceed internal productivity¹³ without endangering the state of employment unless import restrictions are tightened still further, tariffs raised or the rate of exchange depreciated.¹⁴

In practice it seems unlikely that the rest of the world will maintain constant prices. In fact a long term upward movement in prices of around 1 per cent per annum might not prove disastrous and might even have some beneficial effects.¹⁵ Unfortunately it is not possible to say how rapidly productivity is increasing in Australia but in view of the high and fairly constant proportion of national product that has been devoted to capital formation and our earlier discussion on productivity it would be upsetting to find the long term rate was less than 2 per cent per annum. This would permit wages to rise on the average at some 3 per cent per annum. The rate of increase of nominal wages in 1957 was well within this margin while the rate of increase of average weekly earnings was such as to give reasonable hope of accomplishing the objective in the longer term.

It should be the aim of economic policy to ensure this objective is achieved. The pull of excess demand should not be allowed to reinforce any wage slide, but at the same time demand should be adjusted

13. It is important to realize that wages can rise as fast as the average rate of increase of productivity without any effect on the general level of prices. There has been a tendency on the part of some people to think that because the wage bill is roughly 50 per cent of the national income, price stability can only be maintained if wages increase at half the average rate of increase of productivity. This is clearly not so. If productivity increases by 5 per cent and prices are constant, the national income will rise by the same amount. Wages and non-wage incomes can accordingly each rise by 5 per cent without affecting the balance.

14. If it is desired to correct the balance of payments deficit by wage adjustments it would be necessary to reduce wages to the extent of the loss of external productivity. If wages could be restrained within the limits of increases in internal productivity the balance of payments adjustments would in general be better undertaken through the rate of exchange.

15. It is important however to add that short-term expectations should not be allowed to become too certain or else any benefits of the long-term upward movement in prices will be lost.

to supply so as to absorb any increase in the work force and accordingly maintain economic activity at a near full employment level. If wage rates are pushed up too rapidly it may prove difficult for economic policy to operate effectively as the appropriate measures to safeguard employment can frequently only be taken with regard to the likely movement of export prices.¹⁶

The current situation provides an excellent illustration of this difficulty. We have seen that despite the stability of prices and wages in the past year there will be a substantial balance of payments deficit in 1958/9. The present level of import restrictions prevent the deficit from getting out of hand but the intensification of these restrictions to remove another £100 m. of imports would be neither economically desirable nor politically popular. The alternatives at this juncture are to depreciate the exchange rate or to wait and see whether export prices recover and in the meantime use up portion of our international reserves.

In 1957/8 the proportion of the national income earned by farmers was the lowest in the post-war period. If wool prices do not recover this proportion will be even lower in 1958/9. Depreciation of the exchange rate would improve these farm incomes and at the same time help to remove import restrictions. If it were thought that export prices would not recover a good case could be made for depreciating the exchange rate. But it is difficult to be sure about the future movement of export prices. The wheat outlook is very heartening, metal prices are hardening and it is still possible that wool prices might rise in the coming season. A revival of activity in the United States of America would tend to assist any upward movement. While it is true that farmers are receiving low incomes at present they have had a series of excellent years in the past and should accordingly be prepared to stand a few lean years.¹⁷ Finally we have at last achieved price and wage stability and with reasonable international reserves we are in a much better position than hitherto to face the adverse balance of payments. It is of course rarely possible to give a cut and dried answer to problems of this type, but my own feelings are that on balance there are better reasons for leaving the exchange rate where it is than altering it, and that strong efforts to maintain economic stability and encourage internal productivity might be more rewarding.¹⁸

16. This emphasizes the fact that the government cannot indefinitely shirk its responsibilities with regard to wage determination. It may well be that the best way of safeguarding full employment and the balance of payments is for the government to make clear its opinions regarding the consequences of any wage claims before the Commonwealth Conciliation and Arbitration Commission.

17. If farmers are not so prepared the alternative is to set up a wool stabilization scheme. There is no reason why farmers should get all the advantages of a free market and none of the disadvantages.

18. Even though it is not possible to find conclusive evidence it is difficult not to feel that the high rate of capital formation in recent years must have made some contribution towards import replacement and that future development will do even more.

If these efforts are to be successful it is essential that the recent Commonwealth Budget should live up to the Treasurer's aim of maintaining a rate of expenditure in the economy in 1958/9 which will be only just "sufficient to support the necessary increase in activity but not more than that".¹⁹ The economic effects of the budget can be best assessed by preparing a forecast of the demand and supply situation in 1958/9. Assuming that internal productivity increases by 2 per cent and that it is desired to raise the level of employment by 2 per cent,²⁰ the value of Domestic Supplies in 1958/9 in terms of prices at 30th June 1958 would be as follows:

| | Forecast 1958/9 | Change 1957/8 Forecast |
|----------------------------------|--------------------|---------------------------|
| | £m. | £m. |
| Gross national product | 6,060 | + 241 |
| Imports, etc. | 1,030 | + 11 |
| Less Exports, etc. | - 910 | + 24 |
| Domestic supplies | 6,180 | + 276 |

This forecast also allows for the fall in export income indicated in the previous section.

Real personal consumption expenditure per head of population recovered in 1957/8 to the highest level in the post-war period. Assuming a further increase of 1 per cent in real personal consumption per head, personal consumption expenditure will reach £3,960 m.²¹ Public authority expenditure may be estimated from the Commonwealth and State Budgets, while gross private investment may be estimated (or should I say guessed) from information relating to the trends of its main components. Collecting this information together yields an estimate of Domestic Expenditure in 1958/9 as follows:

| | Forecast 1958/9 | Change 1957/8 Forecast |
|--|--------------------|---------------------------|
| | £m. | £m. |
| Gross private investment— | | |
| Dwellings | 230 | + 12 |
| Other building | 160 | - 14 |
| Trucks, cars, etc. | 300 | + 14 |
| Other capital equipment | 330 | - 11 |
| Fixed capital equipment | 1,020 | + 1 |
| Non-farm stocks | 50 | — |
| Farm stocks | 10 | + 50 |
| Public Authorities | 1,110 | + 55 |
| Personal consumption expenditure | 3,960 | + 140 |
| Gross domestic expenditure | 6,150 | + 246 |

19. Budget Speech, 1958-59, p. 3.

20. Raising employment by this amount implies that jobs would be available for the additional labour coming on to the market in 1958/9 so that unemployment would not get any worse. The present rate of unemployment would accordingly be substantially unchanged.

21. This figure includes expenditure by financial enterprises.

The overall result shows a slight deflationary gap of some £30 m. It is possible, though unlikely, that consumer's expenditure could be higher in 1958/9 but it seems more likely that investment in fixed capital equipment could be lower than the estimate given. Dwelling construction is picking up and could be a little higher but non-dwelling construction could contract still further. Motor vehicle purchases recovered rapidly in 1957/8 and while still increasing they appear to be hesitating at the moment. Farm investment could show a substantial drop in 1958/9 and reduce the estimate for other capital equipment by £10 m.—£20 m. Finally the stock increase is not excessive and businessmen might well be prepared to raise their stocks by more than £50 m. in 1958/9.

It seems fairly clear the budget has been well framed for the purpose of ensuring that excess demand does not reappear in 1958/9. It seems equally clear that because of fears regarding the conversion of maturing debt the Government has been prepared to err on the side of deflation. Last year securities maturing in Australia amounted to £399 m., of which £345 m. were converted and the balance of £54 m. was redeemed. In 1958/9 debt amounting to £337 m. falls due. Since a significant part of this debt is war debt held by a large number of individual holders, the Treasury considers that redemptions might easily be as high as £80 m.

This raises several questions. In the first place why should a much larger proportion of this year's maturing debt be redeemed than last year. Even if there is more war loan maturing and the number of individual holders is larger, only £291 m. of the debt maturing is held outside Commonwealth Trust Funds. If the small holders of the war debt felt (quite unwarantedly) they had been tricked when cheap money was abandoned in 1951, do they still feel so strongly now and is this sufficient reason for not taking up new bonds at a higher rate of interest? This seems doubtful, but perhaps there are other even more important reasons. The holders of these bonds may not be prepared to convert because (a) they do not consider the rate of interest on new bonds to be high enough, (b) they may not consider bonds a good hedge against inflation, or (c) they may wish to use the money for some other purpose such as the purchase of durable consumer goods.

It may be thought that it is only if the money is to be spent on the purchase of goods and services that the Treasury should be disturbed from a budgetary point of view. In one way this is so, but if an increasing proportion of the public no longer has faith in bonds the Treasury must be even more careful to avoid an inflationary budget. It seems doubtful whether more than a proportion (perhaps 25 per cent) of the redeemed bonds would be devoted to consumption and this surely does not warrant great concern. It is a pity therefore the reasons for the uneasiness over the redemption of bonds were not given in the Budget. It is also a pity the Treasury's concern over the purely financial implications of the maturing debt induced it to mix fiscal and

financial policies in such a way as to lead to confusion over the true budgetary position.²²

Even if the Government has to resort to central bank credit to finance its cash deficiency on current and loan account it should not be worried about tipping the scales towards inflation. The effect on the supply of money can be controlled by the central bank through the special accounts mechanism. Furthermore it should be easy to do this in 1958/9 as the expansion of money through treasury bill finance will be taking place at a time when international reserves are falling and could be used as a part substitute for a release of funds from special accounts in order to stabilize the banking position.

Whatever the reasons for the Government's action it is impossible not to rejoice at the application of strong budgetary policy. Ineffectual budgetary policy has been one of the main causes of Australia's post-war inflation. Nevertheless, it would have been possible to have given more attention to the needs of certain sections of the community. A little more generosity could have been shown towards pensioners and towards the family man in the lower income bracket. The latter could have been assisted by increased child endowment.

The time has not yet arrived however, when tax reductions can be made. So long as the present rate of immigration continues it is essential to increase our capital formation before allowing the proportion of consumption expenditure to rise. There was a welcome expansion of investment in 1957/8 and every encouragement should be given to increase this investment in 1958/9. The analysis of our prospects for the coming year suggests, though it is by no means certain, that the drift in unemployment may continue. At least there is no indication that the level of unemployment will decrease. Despite the risks associated with the balance of payments there are strong reasons for

22. The cash deficit of £110 m. relates to the deficit after taking into account all revenue and expenditure of the Commonwealth Government including receipts and disbursements from the debt maturing in 1958/9. The overall financial commitments of the Commonwealth which are set out in the Budget may be regrouped as follows:

| | Actual 1957/8 | Prospective 1958/9 |
|---|------------------|-----------------------|
| | £m. | £m. |
| <i>Requirements—</i> | | |
| State Loan Programme | 200 | 210 |
| War Service Land Settlement | 9 | 7 |
| Total | 209 | 217 |
| <i>Source of Funds—</i> | | |
| Budget Surplus | 105 | 24 |
| Loan raisings | 115 | 115 |
| Sinking funds, etc. | 62 | 48 |
| Less bond redemptions | — 63 | — 80 |
| Total | 219 | 107 |
| Overall cash surplus or deficit | + 10 | — 110 |

believing the Commonwealth Government would have been taking a reasonable chance if it had underwritten a further £10 m.—£20 m. in the Loan Programme for State works and housing. It is of course still possible for such action to be taken when the Loan Council meets in January 1959, but time may no longer be on our side.

Monetary policy should continue to be eased. Encouragement should be given to investment, particularly farm investment. Advances during 1957/8 have steadily expanded and at June 1958 were 9 per cent higher than at June 1957. This action has been made possible by the release of some £60 m. from special accounts. However, despite these releases the ratio of liquid assets and government securities to deposits of the trading banks in June 1958 was standing at its lowest level for two years.

Australia has at last achieved internal economic stability. This is a major accomplishment for economic policy, particularly as there is reason to believe it has been accompanied by a favourable movement in our rate of growth. The coming year will again be one in which competition will be the key note in business. While the level of economic activity in 1958/9 should be greater than in 1957/8 there is evidence of growing excess capacity in some industries. Further the whole of the additional labour which will become available during the year is not likely to be readily absorbed and unemployment may even increase.

Further increases in unemployment must, however, be regarded with suspicion and anxiety. It is not easy to maintain just the right level of expenditure to balance demand and supply at full employment, but it should be remembered that while inflation may have its problem it is equally true that it would not be difficult for increased deflationary pressure to have adverse effects on business expectations and reduce the rate of investment. It is essential to ensure that an excessive preoccupation with price stability and the balance of payments deficit does not lead us into this pitfall. The rate of economic development that has been so carefully nurtured in the post-war period must not be allowed to slow down.

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AUSTRALIA AND EUROPEAN FREE TRADE

Part I of this article summarizes for the benefit of Australian readers the main facts about the European Economic Community (or Common Market) and about the negotiations for a Free Trade Area. Part II assesses the probable effects of the European Economic Community on Australia's exports. Part III considers the effects of the various Free Trade Area proposals on Australia. Part IV suggests suitable policies for Australia to follow in prospective negotiations.

I

The European Economic Community Treaty and the Free Trade Area Negotiations¹

European Economic Community

In 1953 six European countries—France, Germany, Italy, Holland, Belgium and Luxembourg—established a common market in coal and steel called the European Coal and Steel Community. Within this Community all customs duties, restrictions and discrimination in transport rates affecting coal, steel and steel-making materials were abolished. In June 1955 the Foreign Ministers of these six countries met at Messina and decided to work towards a common market for all products, not just coal and steel. This project became known as the Messina Plan. A committee headed by M. Spaak of Belgium prepared a detailed report on these proposals in April 1956, and a month later this report was approved by the six governments. In March 1957 they signed a Treaty in Rome instituting their customs and economic union, to be called the European Economic Community. So events moved fast. The Treaty was ratified by each of the governments in the course of 1957, and officially entered into force on 1st January, 1958.

The most important feature of the Treaty is that (a) tariffs and other trade restrictions *between* the Six will be gradually removed until they make up an area of completely free trade, and (b) a common *external* tariff will be gradually established, so that eventually they each levy the same customs duties on goods imported from the outside world. The removal of internal tariffs is to be in three stages, the first

1. The Treaty has been published in English by the Secretariat of the Interim Committee for the Common Market and Euratom, Brussels (distributed by H.M. Stationery Office, London). A useful survey of the European Economic Community and the proposed Free Trade Area, with a discussion of the effects on Australia, is in *Overseas Trading*, 19/3/58 (published by the Commonwealth Department of Trade). Apart from articles in *The Economist* and *The Banker*, valuable references are *European Free Trade: A Survey for Industrialists* (Federation of British Industries, April 1957), *Economic Survey of Europe in 1956*, Ch. 4 (U.N. Economic Commission for Europe, Geneva, March 1957) and "The Free Trade Area Proposals: A Symposium", *Bulletin of the Oxford Institute of Statistics*, February 1957.

stage lasting from 4 to 6½ years, and the other stages 4 years each. At the end of the first stage there will be at least a 25 per cent reduction of the duty on every product, at the end of the second stage at least a 50 per cent reduction, and at the end of the third stage all remaining duties will have been removed. The tariff reductions will begin 1st January, 1959, with 10 per cent reductions. The common external tariff is to be established by stages in a similar way. It will be an average of the four existing tariff rates (France, Germany, Italy and the Benelux customs union), but with various modifications, usually upwards.

The Treaty has the following other important provisions:

- (a) A common agricultural policy is to be established, involving a common managed (but not free) market in agricultural products.
- (b) The various overseas territories (and some former territories) of the member countries are to be associated with the Community in a special way. Imports from these Associated Territories will eventually enter the Community free of tariffs and other restrictions. The Associated Territories will be required not to discriminate between imports from any of the six Community countries but they will still be allowed to impose non-discriminatory tariffs.
- (c) A European Social Fund and a European Investment Bank will be established, as well as a Development Fund for the Associated Territories, France and Germany being the main contributors to the latter.
- (d) It is intended to achieve eventual freedom of movement of capital and labour within the Community, rules of fair competition, a common transport policy, the "harmonization" of social policy, and particularly common policy of equal pay for men and women for the same work, and the alignment of general economic policies and legislation so far as is needed to make the Community work.
- (e) Various institutions to conduct the Community have been or are to be set up—an Assembly, a Council of Ministers, a Commission, and a Court of Justice. The European Commission will be the main executive body.

At present European agricultural trade is subject to many forms of government intervention of which tariffs are only one. While the Treaty provides for internal tariffs to be eventually removed, and a common external tariff to be established, other forms of intervention are to be co-ordinated rather than removed. The Treaty mentions that co-ordination will consist either of common rules concerning competition, the compulsory co-ordination of the various marketing organizations, or a European marketing organization. Specific arrangements are to be worked out by 1960; a European agricultural conference in July this year made a beginning with a study of the facts and issues. The Treaty provides that during the transitional period long-term

contracts between member states and a system of minimum prices will regulate agricultural trade.²

The motivating force of these far-reaching plans is as much political and emotional, as economic. The six nations with a combined population of 160 million hope to establish a political and economic unit comparable to the United States and the Soviet Union. They hope to achieve the benefits of large-scale markets to which they believe much of the industrial success of the United States is due. For many Europeans the *mystique* of a United Europe has replaced the emotional hold of nationalism or Marxism.

The main problem in the Community will arise from members' balance of payments difficulties. The Treaty provides that in emergencies import restrictions will still be permitted, but there must be discussions with the other countries, and the use of restrictions should if possible be avoided. It is recognized that too much use of restrictions in emergencies would negate many of the benefits of the Community. In the absence of import restrictions or exchange rate adjustments countries will have to rely either on internal deflation or on credit arrangements, whereby countries in difficulties obtain sufficient credits to tide them over temporary crises. While the advent of General de Gaulle appears unlikely to affect France's adherence to the Treaty, the continued French balance of payments difficulties create almost insoluble problems for the Community at its very outset. Given French economic and political policies and a continued refusal to adjust the exchange rate, it is at present difficult to envisage any reduction in French trade barriers against the other Community countries.

European Free Trade Area

Faced with the imminent establishment of a European Economic Community which would discriminate against countries outside it, and which might strengthen the competitive position of its members in third markets, the United Kingdom put up in July 1956 the proposal for a European Industrial Free Trade Area. This Free Trade Area was to include the United Kingdom, the European Economic Community countries, and any other members of the O.E.E.C. who wished to join (notably Austria, Switzerland, and the Scandinavian countries). Tariff reductions within the Free Trade Area were to proceed concurrently with the reductions in the Community. The Free Trade Area would not substitute for the Community but would include it; the Community would be a smaller circle within the larger circle of the Free Trade Area. Apart for membership, the Free Trade Area would differ from the Community in three ways:

- (a) Members would not have a common external tariff. Thus while in the Community the French and German tariffs on imports from Canada would eventually have to be the same, in the Free Trade

2. See E. M. H. Lloyd "Agriculture and the European Plan", *Lloyds Bank Review*, April 1957, and *Agricultural Commodities and the European Common Market* (F.A.O. Commodity Series, Rome 1957).

Area the British tariff on imports from Canada could be lower than the French and German one. If the United Kingdom joined the Community she would have to increase her tariffs on many imports from Commonwealth countries, but in the Free Trade Area this would not be necessary. So a Free Trade Area would conform with her Commonwealth obligations.

- (b) The Free Trade Area would not include agricultural products (including feeding-stuffs, tobacco and processed foods). In a memorandum published in February 1957, the U.K. Government justified this by the need to protect her home agriculture as well as to continue Commonwealth preferences on foodstuffs.³
- (c) The Free Trade Area would not aim at such close economic integration as the Community; in particular it would not aim at the free movement of labour, nor would there be a range of supra-national authorities and funds.

The principal technical difficulty in the Free Trade Area proposal is concerned with the definition of origin of goods. If member countries have different external tariffs a possibility of evasion of high tariffs exists. Goods from outside the Area would tend to enter the Area through low tariff countries. The problem would be overcome if all goods traded within the Area had to have Certificates of Origin. These would present numerous difficulties, particularly in the case of goods which are imported into the Free Trade Area in a semi-finished state, and where only part of the finished product is of Area origin. Although an O.E.E.C. Working Party in February 1957 concluded that these difficulties could be overcome,⁴ the fact remains that because of these Certificates of Origin it would not be possible to dismantle customs barriers within the Area.

In 1957 the O.E.E.C. Council of Ministers agreed in principle to set up a Free Trade Area, and set up Working Parties to examine details. But the United Kingdom proposal has not been acceptable to other O.E.E.C. members, and the negotiations have run into increasing difficulties. At present it seems doubtful whether the Area will be established by January 1959 (in time for the tariff reductions in the Community and the Area to run together), and in fact whether it will be established at all. The most serious blow to the negotiations came early in 1958 when the French Government submitted a memorandum to its fellow Community members which appeared to be hostile to the whole Free Trade Area idea. Since then discussions have been taking place among Community members to establish a common view, and alternative proposals, designed to save the Free Trade Area or overcome some of the difficulties, have been put up by Germany and Italy. In 1957 negotiations were held up by the pre-occupation of the Six

3. *A European Free Trade Area* (U.K. Memorandum to the O.E.E.C., Cmnd 72, February 1957).

4. *Report on the Possibility of Creating a Free Trade Area in Europe* (O.E.E.C. Paris, January 1957).

with getting the Community under way; in the early part of 1958 they were held up by French political instability, and now they await the French constitutional referendum. Recent political developments may have hardened the French position.

The French memorandum has not been published, but French objections (and to a lesser extent the objections of other O.E.E.C. members) to the U.K. proposal seem to be along the following lines:

- (a) The Free Trade Area plan is a subtle attempt by Britain to destroy the European Economic Community.
- (b) France will not be able to win the same concessions for her protectionist point of view in the Area as she has in the Community.
- (c) British industrial exports would gain entry into French markets but French agricultural exports would not gain free entry into U.K. markets.
- (d) Differing external tariffs will enable goods from outside the Area to be smuggled in via the low-tariff countries—and no Certificates of Origin procedure could overcome this.
- (e) The United Kingdom gets the best of both worlds by keeping its privileged Commonwealth market while gaining preferential entry into the Community.
- (f) There will be no safeguards in the Free Trade Area—no arrangements for “harmonization of costs” or for helping industries in difficulties (safeguards which exist in the Community).
- (g) The Area is a purely commercial, and rather negative plan, while the Community has the political motive of furthering the unity of Western Europe.⁵

The final shape of the European Economic Community Treaty was heavily influenced by the need to ensure French participation. Provision for a Development Fund for the Associated Territories, for the “harmonization” of social costs, particularly for the extension of the equal pay equal work principle beyond France, as well as numerous safeguard clauses, reflect primarily French influence. It also appears that the Community’s common external tariffs will tend to be high, often higher than the arithmetic average of actual existing duties, and so closer to existing French and Italian than German or Benelux levels. Naturally the French feel unsure of being able to gain similar concessions in the larger Free Trade Area although, at the same time, these considerations explain why the German approach to the Free Trade Area proposal is sympathetic.

5. The state of negotiations and the various issues have been discussed in articles in *The Economist*, 1/3/58, 15/3/58, 22/3/58 and 5/4/58. Particularly good discussions of the French view are in *The Eastern Economist*, 7/2/58, p. 347, and 14/3/58, p. 573. See also J. Hennessy “The Free Trade Area Through German Eyes”, *Lloyds Bank Review*, January 1958.

II

*Effects of the European Economic Community on Australia**Direct Effects*

The direct and immediate effect of the European Economic Community on Australia's exports is likely to be small or zero. Table I shows the value of Australia's exports to the Community. In 1956/57 these were £238m. or 24 per cent of our total exports. Imports from the Community were £71m., so that we had a trade surplus with the six countries of £167m.⁶

TABLE I

Australian Exports to European Economic Community Countries, 1956-57

| £A million | |
|---|-------|
| Wool | 187.1 |
| Hides and skins | 18.9 |
| Wheat | 5.9 |
| Barley and oats | 5.2 |
| Lead and zinc metal, concentrates and scrap . . | 3.9 |
| Butter | 2.3 |
| Meat | 1.0 |
| Apples and pears | 0.6 |
| All other | 12.9 |
| | <hr/> |
| | 237.8 |

But 80 per cent of exports consisted of wool, and another 8 per cent were sheepskins. Here there is unlikely to be any direct effect. None of the Community countries has any tariffs on raw wool or sheepskins at present, and there will be no external tariff for the Community. It is possible that if the Community succeeds in its intention of raising the real incomes of its members the demand for wool will rise as a result. On the other hand the widening of the European market due to the removal of trade barriers may improve the efficiency of European synthetics production and so lower the relative costs of synthetics. But this factor is unlikely to be very important since total synthetic production is at present only very small in relation to European wool consumption, and since much of it is of filament yarn which is not directly competitive with wool.⁷

Our metal exports to the Community at present consist mainly of lead and zinc concentrates, which are also at present not subject to tariffs and where the common external tariff will be low or zero. Wool and metals are our only important non-agricultural exports to the Community. It would be a different matter if we ever became an exporter of, say, aluminium. At present Italy has a 25 per cent duty,

6. This is the *visible* surplus only. There was a small *invisible* deficit of £16m.

7. For a thorough discussion of the effects of European integration on the demand for wool, on which this paragraph is based, see R. J. Cornish "The Proposed Free Trade Area and Western European Demand for Wool", *Quarterly Review of Agricultural Economics* (Bureau of Agricultural Economics, Canberra), July 1957.

France a 20 per cent duty and Germany a 12 per cent duty on imports of unwrought aluminium. The common external tariff is likely to be nearer the present French and Italian level and would mean that while imports from French West Africa could enter the Community free of duty, imports from Canada or Australia would pay anything up to 20 per cent. Australia is at present an exporter of unwrought lead and zinc metal, as well as concentrates, but while some of the concentrates are sold to the Community our metal exports go principally to Britain, the United States, Japan and India. If we tried to export the metal instead of the concentrates to, say, Germany, we would find that, while imports from Belgium could come in freely, our metal would have to pay the common external tariff of about 10 per cent.⁸

Australian agricultural exports (excluding wool, hides and skins) to the Community added up to only £20m. in 1956/57, less than 10 per cent of all our exports to the Community and about 2 per cent of total exports.⁹ These figures put any problem into perspective. The main items are wheat and barley (£11m.). Though the detailed agricultural arrangements in the Community are not yet known, it is likely that they will protect the interests of Community farmers at the expense of outside suppliers. French wheat, being "soft", is a close competitor of ours, and we can expect to lose markets (both potential and actual), though this might be partly offset by reduced French wheat exports to Britain. Our exports of apples to the Community are of significance in some years, but here our position may be protected by the fact that we market in the European off-season.

Indirect Effects

The establishment of the European Economic Community could affect our exports to outside countries, notably Britain. If a Free Trade Area to envelop the Community is not established, Britain could lose industrial markets in Europe and elsewhere. This might reduce her imports from Australia, not offset by greater Community imports from us. But such an effect would be small, if any. If the Belgian textile industry gains at the expense of Yorkshire, Belgian wool purchases would rise to compensate for lower British purchases. On the other hand, reduced British purchases of metals might be balanced by greater Community purchases not from Australia but from their Associated Territories.

The establishment of the Community might reduce the outflow of capital from Britain to Australia. Capital might be required for her own industrial readjustments, and if her real income falls funds available for investment would fall. Furthermore, British balance of pay-

8. At present Germany has only a 5 per cent tariff on zinc (unwrought) and no tariff on lead. But the French tariff on zinc is 12 per cent and on lead 8 per cent, while the Italian tariff on both is 13 per cent. At the time of writing the common external tariffs for metals had not been fixed; but they will probably be higher than the arithmetical averages of the existing tariffs, close to the French and Italian levels.

9. See Table I; also *Overseas Trading*, 19/3/58, *op. cit.*

ments troubles associated with a falling-away of export markets could induce a U.K. government to limit the flow of capital to the outer sterling area and compel the funds to be employed in reorganizing British industry.

Finally, the Community's agricultural arrangements could affect the markets for our agricultural products in Britain. On the one hand, Dutch butter and French wheat may be diverted from British to German markets, the losses to us in Germany being offset by gains in Britain. On the other hand there is a danger that European agriculture will be strengthened and developed by the new management, with the by-product of increased exports to Britain. At present exports of wheat, butter and canned meat from the Community compete with our exports. The Community's agricultural arrangements will forbid dumping within the Community, so that when France has a good wheat harvest she will have to dump her surplus in Britain rather than Germany. The Community's bargaining position will be strong, so that counter-measures by Britain or Australia will be more difficult.

Conclusion

This analysis has explored some remote possibilities and elaborated on very indirect effects. The main conclusions are that (a) wool is our main export to the Community, and it is unlikely to be much affected, and (b) any effect on our other agricultural exports is likely to be adverse though, in terms of figures, not very significant. Losses will be more of potential than of actual exports. Australia will not be one of the important losers from the establishment of the European Economic Community. The main sufferers will be our fellow Commonwealth members, India, Ghana, Canada and Britain, as well as Switzerland, Japan and the countries of Latin America.

III

The Free Trade Area and Australia

If an Industrial Free Trade Area were established on the lines of the United Kingdom proposal the further effects on Australia would also be negligible. Agriculture would be excluded, and Australia's other exports to Britain do not compete with products exported by members of the Community. The main losers within the Commonwealth would be India and Hong Kong, exporters of textiles. The Community countries as a whole are not net exporters of lead and zinc metal. The Associated Territories of the Community would not be associated with the Free Trade Area, so that there would be no prospective danger from the development of metal industries there.

The dangers as well as the potential gains to Australia will arise if Britain is compelled to make concessions to the European viewpoint for the sake of saving the Free Trade Area concept. There are then three main possibilities, and various combinations of them: (a) the ending of preferences for Commonwealth agricultural exports in the British market; (b) the establishment of an Industrial Customs Union

(and not just a Free Trade Area) to include Britain; and (c) the partial or complete inclusion of the Commonwealth in a wider Free Trade Area, similar to the inclusion of the Associated Territories in the European Economic Community.

- (a) At present Commonwealth agricultural produce enters Britain generally free of duty. Protection to home agriculture is by means of subsidies, not tariffs or quotas. But there are tariffs on imports of certain products from outside the Commonwealth, and these represent the preferential margin from which Commonwealth exporters benefit. Britain may be compelled to remove these preferences. Either she may let in imports from other Free Trade Area countries free of duty, while keeping the tariff on imports from countries such as Argentina, or she may sweep away all duties on food imports altogether. At present Australian exports of only a few products—dried, fresh and canned fruit, wine, canned beef and sugar—benefit significantly from preference.¹⁰ These account for less than a fifth of our exports to Britain—about £45m. Only a part of our sugar exports is sold at the free market price plus preference; the rest is sold at an annually negotiated price on the basis of the Commonwealth Sugar Agreement.
- (b) If Britain agreed to an Industrial Customs Union all the problems connected with the definition of origin of industrial goods would disappear. The key distinction here between a Customs Union and a Free Trade Area is that while *within* both there is free trade, there is a single external tariff *around* a Customs Union, while the members of a Free Trade Area can have different tariffs for goods coming from outside the Area. If Britain joined a Customs Union (perhaps becoming a member of the European Economic Community with respect to everything except agriculture) she would then have to raise her external tariffs on imports from the Commonwealth to those of the European Economic Community. If the common external tariffs are fixed as averages of the present British tariffs and the present tariffs of the other member countries, the common tariffs would probably be lower than the external tariffs of the Community alone. Assuming processed foods are excluded from the Industrial Customs Union, the only Australian products affected would be zinc and lead metal. While zinc metal from Belgium would be able to enter Britain free of duty, Australian metal would have to pay the common external tariff. The effects would be even more damaging on exports of textiles from India and Hong Kong.

But this possibility appears most remote. To begin with, it would not only remove Commonwealth preference on the goods concerned; it would set up an "anti-preference". Furthermore, if

10. See W. R. Carney, "The Ottawa Agreement Now", *Economic Record*, May 1956.

the Customs Union included the Associated Territories of the Community, Britain would be giving imports from French colonies preference over imports from British colonies, while if it excluded the Associated Territories it would conflict with the Community Treaty. And if imports from the Associated Territories were allowed to enter freely into Community countries but not into Britain, while Community imports could come freely into Britain, there would then still be a definition-of-origin problem. Instead of Commonwealth exports slipping into the Community via Britain, Associated Territories exports would slip into Britain via the Community.

- (c) A third possibility is that part or all of the Commonwealth enters the Free Trade Area in the same way as the Associated Territories are part of the Community.¹¹ There are many degrees of such a move but in its full sense it would be radical. It would mean the end of Commonwealth preference. On balance the gains to Australia would probably outweigh the losses. Britain would be a net loser, compared with the establishment of a limited Industrial Free Trade Area on the lines of her original proposals, but she might be prepared to pocket the losses for the sake of avoiding the greater losses of being shut out of Europe.

All members of the European Free Trade Area would have equal access to the markets of the Commonwealth and the Associated Territories. Thus the Commonwealth and the Territories would not necessarily cut their protective tariffs, but would cease granting preferences to their mother countries. Britain would sell more to French Africa and France more to Australia. Australia would gain by being able to buy on the cheapest market.¹² Commonwealth and Associated Territories imports would enter freely into all parts of the European Free Trade Area. Australia would lose her preferences in the British market, but would avoid being discriminated against in the European market. If these arrangements do not include agriculture the effect on Australian exports would not be significant; if they do, then there might be a significant switch of those of our exports benefiting from preferences from Britain to Europe, but it is difficult to say whether on balance we would gain or lose.

This is the most radical version of this possibility. A more limited version is that Britain continues giving us preferences in her market, and we do not gain free entry into the Community market, but we reduce our preferential tariff margin on imports

11. The suggestion is made, for example, by A. C. L. Day "Salvaging the Free Trade Area", *The Listener*, 1/5/58.

12. Protection of Australian manufacturing industry need not be affected by the ending of Commonwealth preference. In some cases the elimination of preferential margins would simply mean a shift in the source of imports from Britain to other European countries. If total imports would rise as a result, the elimination of preferences would have to be accompanied by some increase in the tariff rate (i.e. in the tariff applying at present to British imports and which will then apply to all Free Trade Area imports).

from outside Britain. This would be to the gain of the Community countries and to the loss of Britain. A reduction in Commonwealth preferences might be the *quid pro quo* France would accept in return for consenting to an Industrial Free Trade Area similar to the original United Kingdom proposal. From our point of view there would be the potential loss of the reserve bargaining power inherent in the preferences, but the direct and actual gain in cheapening our imports.

IV

Australian Policy

In this maze of possibilities, where does the Australian interest lie?

Need for Agricultural Stabilization

The direct effects of the European Economic Community on present exports to Europe need not worry us, though it will certainly worry other outsiders such as Brazil, Ghana, Japan, not to speak of Britain. But the arrangements for agriculture, though still quite indefinite, have certain potential dangers.

The European Economic Community will in fact introduce regional agricultural stabilization schemes in the same way as Britain stabilized her post-war agricultural trade with some countries on a bilateral basis by means of long-term contracts. These regional arrangements often have benefits when compared with no stabilization at all, but they frequently work out to the loss of countries trading in the same products but not parties to the agreement. A counter-move would be to re-establish Commonwealth long-term contracts. But in competitive regionalism lies disaster for world trade. It is preferable that commodity trade be regulated by a world-wide multilateral system in which all producing and consuming countries have a say. Taking a long view, a unified world wheat market, regulated on the lines of the International Wheat Agreement, is preferable to the Europeans having their own arrangements—over-influenced by French protectionism—while Australia tries to gain privileges in the United Kingdom market.

Britain seriously weakened the International Wheat Agreement by withdrawing from it in 1953; the agricultural support and commodity stockpile policies of the United States have been the main upset in world commodity markets in recent years; and Australia herself has refused to take part in any stabilization scheme for wool, so that her advocacy of international commodity stabilization would hardly be lily-white. We have all offended, but it remains true that at this stage we ought to encourage *international* stabilization not necessarily as a preferable alternative to free trade, but as an alternative to European protective regionalism.

Readiness to Abandon Commonwealth Preferences

Just as the direct effects of the European Economic Community need not worry us, so the establishment of an Industrial Free Trade Area on United Kingdom lines would affect us very little. The real

problem arises when the Community countries finally present Britain with the alternative of no Free Trade Area at all or one of the arrangements discussed above, all of which would affect Commonwealth preference. At that stage Commonwealth countries will enter the negotiations directly, and the U.K. response will depend very considerably on Commonwealth attitudes.

The effects on members of the Commonwealth of a total or partial ending of preferences will vary. If the preferences are reduced or ended only in the markets outside Britain then Britain will be the only significant loser, and this loss may be a fair exchange for the gain of a European Free Trade Area. If the preferences are ended also in the British market the effects on some colonies and Commonwealth members may be significant. But the Australian loss would not be great enough to justify blocking a solution. A subsidy of a few million pounds would offset the effects on the export industries concerned.¹³ Because our import preferences are probably more effective in raising our import prices than the preferences in Britain are in raising our export prices there would be a net gain to us from an all-round ending of the whole preference system. Furthermore, in return for agreeing to a reduction in preferences we may be able to obtain from the Community countries either preferential entry into their market or concessions to our viewpoint when their agricultural arrangements are discussed.

Pressure through G.A.T.T.

Finally, the Community's agricultural arrangements and the levels of its external tariffs might be influenced by pressure through G.A.T.T. The rules of G.A.T.T. allow customs unions, but do not allow (a) the establishment of new preferential arrangements other than customs unions, or (b) external tariffs for a customs union which are higher or more restrictive than existing duties. It is arguable that the Associated Territories will be linked to the Community in what is not a customs union but simply a preferential arrangement, and that the Community's external tariffs will in some cases be higher than the average of existing tariffs. But can G.A.T.T. be more than a sounding-board? Commonwealth countries are not in a strong moral position when preaching against new preferential areas, and there is little sign so far that Community countries intend to take much notice of the doubts expressed through G.A.T.T. by a large number of countries, including Australia. In the final analysis it may be necessary to offer something in return if the adverse effects of the Community on Britain and other members of the Commonwealth are to be avoided.

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13. At present most of the export industries concerned, notably sugar and dried fruits, benefit from a home price scheme, which means in effect that exports are subsidized by home consumers. If preferences were removed a direct export subsidy financed by the Treasury might be added. The net effect would be that the volume of exports would be the same as before, but the subsidy would enable producers to market their produce at the reduced prices brought about by the ending of preference.

TRADE AND REDISTRIBUTION OF INCOME IS THERE STILL AN AUSTRALIAN CASE?

I

Anyone reading the first issues of *The Economic Record*, which appeared in the mid-'twenties, cannot fail to notice how alive among Australian economists the tariff issue was in those days. Using *The Economic Record* as a gauge, economists' interest remained alive during the 'thirties. However, since 1938, with the exception of one article in the December 1945 issue, authors have paid little attention to Australian trade protection as a policy. In the meantime tariff theory has been further developed.

Government-sponsored investigation of the Australian policy of protection dates back to the late 'twenties and resulted in 1929 in the publication of a notable report on the economic effects of the Australian tariff. This report incorporated a serious attempt to estimate the cost of Australian protection. Protective tariffs were mainly justified on the grounds that they had assured workers of a larger share in the Australian national income, thus stimulating an increase in population.

The technical problem of estimating the cost of protection was taken up again recently in an article by Dr. W. M. Corden in *The Economic Record* of April 1957. In the present article attention is concentrated on developments in that field of tariff theory which concerns itself with the effects of trade upon the domestic distribution of income. The approach is largely historical and the article mainly in the nature of a progress report, but at the end a few brief observations are made with regard to the applicability of the theory to the Australian scene. Particular and detailed consideration is given to the earlier Australian contributions which stimulated the development of this part of the theory of tariffs.

The classical theory was not able to explain adequately how the gains from trade are distributed between different factors of production such as, for example, "Land" and "Labour", and according to Metzler,¹ as far as international trade theory was concerned, "the theory of distribution did not become a systematic part of international economics until the interwar period of the present century".

The foundations for a more modern and systematic approach to the problem of the effects of trade on the distribution of income were laid by E. F. Heckscher, in 1919, in an article in the Swedish *Ekonomisk Tidskrift*.²

Heckscher's treatment was later refined and elaborated by Bertil Ohlin³ and is nowadays usually referred to as the Heckscher-Ohlin

1. Lloyd A. Metzler: *The Theory of International Trade*, Ch. 6, p. 237, *A Survey of Contemporary Economics* (ed. Howard S. Ellis).

2. For a recent translation of this article see *Readings in the Theory of International Trade*, American Economic Association, No. 13 (Blakiston, 1949).

3. *Interregional and International Trade* (Cambridge: Harvard University Press, 1952).

theory⁴ which, simplified and summarized, runs as follows: Commodity price differences explain trade between countries; different factor prices explain differences in commodity prices; and differences in relative abundance of the factors are the main reason behind factor price differences.⁵

In the interwar period, after Heckscher's contribution, most economists would have agreed that international trade could have an effect upon the share in the national income of the factors of production. But although it was realized that Labour could lose from the removal of a tariff on manufactured goods if it entered heavily into their production, many economists, such as Haberler⁶ and Ohlin,⁷ thought it doubtful whether Labour would lose in an absolute sense as well as relatively. It was thought by such economists that the rise in the total national income occasioned by trade would more than offset a relative worsening of Labour's share in this income. Viner,⁸ however, pointed out that an absolute as well as a relative worsening of the position of Labour was quite conceivable.

II

In Australia the problem of the effects of trade upon the national distribution of income entered the tariff discussions in 1925 in an article by J. B. Brigden.⁹ The ideas contained in this article had a great

4. A very helpful abbreviated account of this theory can be found in P. T. Ellsworth's *International Economics* (1st ed., Chs. V and VI).

5. The Heckscher-Ohlin theory gave rise to the so-called "Heckscher-Ohlin law of factor price equalisation". This law states that trade will tend to make a country's relatively scarce factors more abundant and its relatively abundant ones more scarce and will therefore tend to decrease the price of the former and increase that of the latter. This tendency for international trade to equalize factor prices such as wages, interest, rent, etc., was, according to Ohlin, not likely to be complete. More recently, however, both Lerner and Samuelson showed that under free trade and in the absence of transport costs, complete equalization of the prices of the factors of production, both absolutely and relatively, would have to occur. Haberler, on the other hand, is of the opinion that the many assumptions underlying Lerner's and Samuelson's conclusions are so restrictive and unrealistic that, although formally correct and of pedagogic value, their findings "can hardly be regarded as a valuable contribution to economic theory". Balogh and Meade have also shown themselves to be concerned about these assumptions. The reader is referred to the following literature:

Abba P. Lerner: "Factor Prices and International Trade", *Economica*, Feb. 1952.

Paul A. Samuelson: "International Trade and the Equalization of Factor Prices" and "Factor Price Equalization Once Again" in *The Economic Journal*, June 1948 and June 1949 respectively.

Gottfried Haberler: "A Survey of International Trade Theory", *Special Papers in International Economics*, No. 1, Sept. 1955, Princeton University, pp. 19-20.

T. Balogh: "Static Models and Current Problems in International Economics", *Oxford Economic Papers*, June 1949.

J. E. Meade: *Problems of Economic Union*, p. 61, and *Trade and Welfare*, Chs. XXI-XXIII.

Also: S. F. James and I. F. Pierce: "The Factor Price Equalization Myth", *Review of Economic Studies*, 1951-52, XX (2), and P. A. Samuelson: "A Comment on Factor Price Equalization", a reply in the same issue.

6. Gottfried Haberler: *The Theory of International Trade*, 3rd impr., pp. 193-195.

7. *Op. cit.*, p. 307.

8. Jacob Viner: *Studies in the Theory of International Trade*, pp. 193-4.

9. J. B. Brigden: "The Australian Tariff and the Standard of Living", *The Economic Record*, November 1925.

influence upon the later findings of a committee of experts¹⁰ which findings have since been regarded in Australia as a scientific justification of the Australian policy of protection. It is therefore of importance to deal with Professor Brigden's article in some detail.

In presenting his case Brigden began by stressing that Australian conditions differed radically from those that prevailed in England in the first half of the nineteenth century when the case for free trade was vigorously pushed in that country. In England, at that time, existing tariffs were on agricultural products and favoured the landed classes. Free trade was in the interest of manufacturers and industrial workers and therefore of the rapidly increasing city population. In Australia, on the other hand, tariffs have been on manufactures and it was Brigden's thesis that they have protected the standard of living of increasing numbers of wage earners.

As an argument in favour of tariffs based upon the desire to redistribute the national income, the case presented by Brigden in 1925 in support of the Australian policy of protection in the past was not altogether clear-cut. His case was by no means exclusively based on the argument that tariffs can achieve a—politically desired—redistribution of income. It differed in presentation from the usual approach and intertwined were several other arguments for tariffs.

Throughout the argument the case was narrowly linked with an increase in population on which the author constantly focused attention. This introduces a dynamic element into the discussion. Treatment of the effects of trade on the distribution of income usually referred to given quantities of the factors of production, including Labour and this approach is still the customary one.¹¹ However, Brigden did not discuss the effects of trade or protection upon population growth or vice versa. He was content to assume that population pressure was there irrespective of the economic policy pursued. The introduction of an increasing population, however, leaves less scope for making definite statements about Labour's absolute share in the national income after protection, because the national income itself may have changed, with an increased population, through factors other than trade. This does not imply that nothing meaningful can be said. If, through increased pressure of population on resources (with or without trade), national income per head falls and if a tariff redistributes income to the extent that, for the factor Labour, income per head remains the same, Labour is obviously better off than it would otherwise have been even if the real income of the individual worker has not improved. This is exactly what Professor Brigden thought had been achieved in Australia.

10. *The Australian Tariff—An Economic Enquiry*. (Melbourne University Press, 1929.) This is the report that has been referred to already. It was written by J. B. Brigden, D. B. Copland, E. C. Dyason, L. F. Giblin and C. H. Wickens.

11. Compare for example Stolper and Samuelson: "Protection and Real Wages", *Review of Economic Studies*, November 1941. Their so-called box diagram implies fixed quantities of the factors of production.

Although not always unambiguous, it would seem that Brigden's complete case in defending Australian protection up to 1925 can be summarized as follows:

Australian natural resources of all kinds were unable to support an increase in population at the same income per head. This applies equally under protection and under free trade.¹² Free trade would have done two things:

- (1) It would have forced the increasing population into agricultural production under diminishing returns.
- (2) It would have worsened Australia's terms of trade with the rest of the world.

These two influences are called the "cost" of free trade. Protection, on the other hand, involves the "cost" of having to forgo the lower cost of imports. This is offset, however, by the avoidance of production under diminishing returns and by the avoidance of a worsening of the terms of trade.

Lastly, in spite of an increase in population, the standard of living of the wage earner has been maintained at the expense of landowners who under free trade would have had higher incomes.¹³

It is not quite clear what Brigden thought had really happened to the incomes of landowners. If real income increases less than in proportion to the population increase, average real income per head must have decreased somewhat. But if workers' standards of living did not change, the income per head of landowners must have decreased. Yet Brigden said that protection had "merely prevented a rise in land values". With regard to total income per head there is the suggestion that it had been higher under protection than it would have been under free trade, although still lower than in proportion to the increase in population. Protection, he says, "has imposed a reduction of income which might have been as great from a fall in export values alone and has maintained an income which certainly would have fallen through diminishing returns from land".

Brigden's original article gave rise to criticism by Benham¹⁴ and a discussion followed in *The Economic Record*, in the statistical issues of which L. F. Giblin also took part.¹⁵

12. See *The Economic Record*, November 1925, p. 42.

13. In interpreting Professor Brigden in this way the author has taken the liberty of giving his frequently used term "the standard of living" the content "the standard of living of the wage earner". This seemed reasonable also in view of later developments in the discussion. It remains true, however, that Brigden's own article leaves some doubt. On p. 30 we read: "the standard of living resulting to the general mass of the community" which seems to support this interpretation. But on p. 37 is stated: "Free trade in England made for a higher standard of living . . . Protection in Australia may have achieved a similar result". This would seem to refer to "standard of living" in the more generally used sense of real income per head.

14. F. C. Benham: "The Australian Tariff and the Standard of Living; A Reply". *The Economic Record*, May 1926.

15. See *The Economic Record*, May and November 1927. Giblin's Note is in the May 1927 issue.

Benham doubted the factual assumptions, with regard to decreasing returns in Australian agriculture and with regard to the danger of worsening terms of trade, which were contained in Brigden's exposition. The controversy was partly on statistical evidence, where Giblin supported Brigden's case. In a restatement, Benham ably refuted the diminishing returns argument for protection as developed by Brigden.¹⁶

With regard to the effect that protection has had upon the Australian distribution of income, Benham believed that little could be said with any certainty. Although he admitted that protection had kept down the value of rural land, he did not believe that it follows that under free trade landowners would have received more and Labour less. For protection, he said, "has also kept down the value of 'labour' performed in primary production . . . and it has raised the value of city land and urban property in general". Because Benham's views would seem to be representative of the main body of economic opinion with regard to the effects of protection on the distribution of income at that time, it may be interesting to quote him in full: "Possibly Protection, coupled with wage regulation, has enabled somewhat higher 'real' wages to be paid to certain relatively unskilled workers. These may gain, as workers, more than they lose, as consumers, by the increased cost of living: although workers in general seem to the writer to suffer from Protection. Such gain as has occurred to the relatively unskilled appears to have been balanced by loss to the relatively skilled".¹⁷

If we compare the position of Brigden and Benham with regard to the influence of trade on the distribution of income it would seem that Brigden's proposition, that Labour had gained from Protection, although suffering from invalid theoretical support, would in the

16. See *The Economic Record*, November 1927, pp. 240-243. Briefly stated Brigden's diminishing returns argument for protection ran as follows:

Under free trade, people would have been forced into primary industry, because there would not have been a manufacturing industry of sufficient size to take care of the growing population. This would have involved the cost of having to produce under diminishing returns and would have resulted in a lower real national income per head.

Benham's objection to this argument was basically this: If protection thus provides for a higher real income per head, manufacturing industry must have been more productive than the alternative extension of primary industry would have been. However, if this is to be assumed, resources including Labour would not under free trade have moved into primary industry beyond the point where their productivity in the primary field would have been lower than in manufacturing. As soon as that point had been reached, they would have been used in manufacturing industry where their productivity, and therefore rewards, would have been higher. Because of this Benham saw no reason to assume that real national income per head would have been any lower under free trade than under protection. On the contrary, he believed, partly on grounds of efficiency, that free trade would have resulted in a higher real national income per head.

Two things may be noted here:

First, Benham's refutation does not concern possible and perhaps desired shifts in the distribution of the national income.

Secondly, presented in a different way, the diminishing returns argument for protection may be quite valid, as mentioned later in this article when Copland's contribution is discussed.

17. *The Economic Record*, May 1926, p. 39.

future come nearer the limited theoretical justification of Stolper-Samuelson than Benham's more uncertain stand. Benham, however, by stressing that Labour contains within itself different categories and by stressing the difference between rural and urban land values, loosened some of the rigid assumptions that underly the Stolper-Samuelson theory.

III

The reader of the 1929 *Australian Tariff Enquiry* will notice the resemblance of the ideas contained therein to those to be found in Brigden's 1925 article. The discussion in the *Enquiry* is more comprehensive and a statistical attempt is made to measure the cost of protection, but basically the conclusion is that the tariff in Australia was justified. The main conclusion was framed as follows: "The advantage of protection is in the maintenance of a larger population than could have been expected at the same standard of living¹⁸ without the protective tariff. It is not an advantage to every part of the population nor has it produced the maximum income per head. But given the basic Australian objective of seeking the largest white population at the highest standard of living,¹⁹ we consider that the protective tariff has been an effective means of securing it. The practical conclusion is that, having established this population, it would be disastrous to abandon the policy which has made it possible".²⁰

In a review article on the 1929 *Tariff Enquiry*, J. Viner,²¹ although basically critical of its findings, considered the *Enquiry* a significant contribution to the tariff literature. He said "no previous study has gone as far as this in exploring the relation between tariffs and the distribution of income".

IV

There is little doubt that this Australian contribution stimulated the search for theoretical support of the proposition that a large factor of production, such as Labour, will see its position improved, absolutely as well as relatively, by means of a tariff on manufactured goods in the production of which it enters heavily.

The argument for tariff protection based on the redistribution of factor income was transferred to the United States in 1931 by Professor D. B. Copland, one of the authors of the 1929 *Tariff Enquiry*.²² In his argument, however, Copland did not base his defence of the Australian protective policy purely on these grounds. He said: "If, as seems established by the investigation, it would have cost more to extend production on the land than to have indulged in a limited application of the tariff to manufacturing industry, the latter course was economically the sounder".

18. To be interpreted in the same sense as in Brigden's article.

19. This time perhaps to be interpreted in the ordinary sense of real income per head.

20. See p. 140 of the *Enquiry*.

21. J. Viner: "The Australian Tariff". *The Economic Record*, November 1929.

22. D. B. Copland: "A Neglected Phase of Tariff Controversy". *Quarterly Journal of Economics*, February 1931.

It may be noticed that, according to Viner, all that the 1929 *Enquiry* had really tried to show was that a redistribution of income from landlords and capitalists to an increasing working population had been achieved. This desire to redistribute income was basically political and therefore not an economic argument for protection. However, both the *Enquiry* and Copland mention the increasing cost aspect of primary production and contrast this with the situation in manufacturing industry. If there are external economies associated with manufacturing, it is generally recognized that there is a possibility of a loss to a country from free trade. Under free trade such a country would specialize in accordance with individual marginal comparative cost. When there are external economies (external to the firms or industry, but internal to the nation) the social marginal cost involved in manufacturing may be lower than the private marginal cost. Yet, under free trade, production is decided on the basis of the latter. Some protection may therefore be economically justified. However, this does not imply that this type of argument received the central attention that it perhaps deserved either in the 1929 *Enquiry* or in Copland's 1931 article. To the extent that external economies can indeed be achieved, there is, in the long run, no "cost" to the nation involved in protection.²³ Yet these "cost" considerations took central place, which seems to confirm Viner's contention that the basic conclusion of the *Enquiry* was that the tariff had made possible a redistribution of income, maintaining the living standards of an increasing work force.

This view is further confirmed by Copland himself and by another member of the committee which reported in 1929. Professor Copland²⁴ stated: "True, on economic grounds it would be wiser to have the smaller population at a higher standard of living", and ". . . the tariff . . . is a 'method of painless extraction', and it is idle for economists to ignore such a fundamental fact".

Professor Giblin²⁵—in 1936—said with regard to excess costs: "The meaning of that is that Australia as a whole is forgoing consumption goods to that value for the sake of additional population and employment" and also: "The 'benefit' is primarily an increase of population—a political end which cannot be measured in terms of economics".

V

Copland's article gave rise to further discussion of the issue of the effects of a tariff on the distribution of income. In *The Quarterly Journal of Economics*, November 1938, Karl L. Anderson dealt with some of Copland's views in an article entitled "Protection and the Historical Situation: Australia". Anderson denied the possibility of maintaining the standard of living of an increased labour force by

23. The same applies to a favourable "terms of trade effect" of the tariff which is contained in the discussion in the *Enquiry*.

24. *Op. cit.*, p. 308.

25. L. F. Giblin: "Some Economic Effects of the Australian Tariff". *The Joseph Fisher Lecture in Commerce*.

means of protection. He asserted that under free trade each of the factors of production receives its maximum income because each separate factor "seeks out its most effective place".²⁶

Professor Anderson's critique gave rise to a prompt reaction in America by Marion Crawford Samuelson.²⁷ As her reason for wishing to examine the validity of Anderson's conclusions, Mrs. Samuelson gave that "matters of principle are involved transcending in importance the details of the Australian case, and because Professor Anderson has stated boldly and clearly a view widely held by many economists".

Mrs. Samuelson supported Anderson in his refutation of the "diminishing-returns-argument" for protection as it was presented in the Australian case. This refutation was along much the same lines as that by Benham.

She rightly criticized Anderson's refutation of the "terms of trade argument" for protection. She also took issue with Anderson on the effects of the tariff on the distribution of income. In doing so, she defended the Australian case in so far as the possibility of maintaining Labour's standard of living by means of the tariff was concerned. She pointed out that to claim, as Anderson did, that under free trade the marginal value productivity of a factor in every use is equalized, really proves nothing with regard to the absolute share of that factor. It does not imply a maximization of return to that factor. She said: "In fact, if all Australian labour were organized, it would pay them to embark on a purposive policy of discrimination designed to render unequal the remunerations in different occupations, just as it always pays a monopolist to discriminate, if he can". More important than this, she said, is the fact that by protection one can change the relative prices of the two goods, so that the new marginal value productivities (of the factor Labour) will be equalized at a level more favourable in an absolute sense to the working class.

"It is perfectly clear," said Mrs. Samuelson, "that the imposition of a prohibitive tariff on the import of raw silk into the United States would increase the rent of the owners of land suitable for the growth of mulberry trees and the earnings of workers, if there be such, completely specialized in the caring for silkworms. What is true of a narrowly defined factor of production may also be true of the broad categories of land and labour. In the Australian case, where there are more or less constant returns to labour in manufacturing, with diminishing returns in land, the above possibility must be taken very seriously."

It was in 1941 that Stolper and Samuelson took the matter further and proved that, under certain assumptions, one of two productive factors which was made relatively scarcer by a tariff must of necessity gain, not only relatively, but also absolutely. Basically, their argument was as follows:

26. *Op cit.*, p. 103.

27. See Marion Crawford Samuelson: "The Australian Case for Protection Re-examined". *The Quarterly Journal of Economics*, November 1939.

Suppose two countries, *A* and *B*, produce two commodities, wheat and watches, with two factors of production, Capital and Labour. *A* has a relative abundance of Capital, *B* of Labour. Wheat production is Capital intensive, watch production Labour intensive. A tariff is now imposed by *A* on the importation of watches. This will mean increased production in *A* of watches and both Capital and Labour in *A* will be shifted from the wheat to the watch industry. The result of this will be to reduce the proportion of Labour to Capital in both the wheat and the watch industry in *A*. As a result of this, the marginal product of Labour must be higher than before and the real wage rate must therefore have risen.

The important difference from earlier reasoning is that Stolper and Samuelson proved that under the assumed circumstances²⁸ Labour's absolute share must of necessity always rise, quite irrespective of whether real wages are measured in terms of watches or wheat. There is no index number problem. Neither is it necessary to assume monopoly in the Labour market. Also, Labour gains even if the real national income decreases.

Owing to the fact that their proof only applied under rigid assumptions—for example it applied strictly only where no more than two factors of production are involved—Stolper and Samuelson were very cautious with regard to a practical application of their theory. They said: "Thus, in Australia, where land may *perhaps* be said to be abundant relative to labour, protection *might possibly* raise the real income of labour" (my italics).

VI

The contribution by Stolper and Samuelson was generally considered to be a great improvement in the theory of tariffs. But as Metzler pointed out,²⁹ a number of questions still remained unanswered.

Stolper and Samuelson developed their theory under the assumption "that the country in question is relatively small and has no influence on the terms of trade". Although Brigden and Copland expressly assumed an unfavourable effect on the terms of trade from a removal of the tariff, the pure terms of trade argument for protection has, so far, been kept outside our discussion. Metzler, however, stresses that whether a tariff increases or reduces the relative returns of the scarce factor is not independent of what happens to the terms of trade. Whether Labour (if the relatively scarce factor) sees its real and relative returns increased or decreased by the tariff depends, according to Metzler, upon the magnitude of the favourable movement in the terms of trade, compared with the size of the tariff.³⁰

What role, then can the terms of trade play?

28. Which include full employment of the two given factors.

29. Lloyd A. Metzler: "Tariffs, the Terms of Trade, and the Distribution of National Income". *The Journal of Political Economy*, February 1949.

30. Compare also J. E. Meade: *Trade and Welfare*, Ch. XVIII in his discussion of the "abnormal case".

Normally the tariff will increase the prices of import-competing goods, relative to the prices of export goods, within the country. This will attract more of the scarce factors into the import-competing industries, and in this case the Stolper-Samuelson conclusions stand. This relative increase of the prices of import-competing goods will always occur if the foreign demand for the products of the country is elastic. This can be shown with the use of the Mill-Marshall schedules of reciprocal demand which Metzler uses throughout. Also, if the tariffs do not reduce the demand for imports at home to any substantial degree, the movement of world prices is likely to be negligible. However, says Metzler, if the world demand for the tariff-imposing country's exports is inelastic and if the tariffs do reduce the demand for imports in the tariff-imposing country to a considerable extent, the fall in world prices of imports, relative to world prices of exports, may be so large that domestic prices of imports become lower, in relation to export prices, than before the tariffs were imposed, even after the tariffs are added to the world prices.

The main purpose of Metzler's contribution was to find out under what circumstances tariffs, because of their effect on the terms of trade, reduce the domestic ratio of the prices of import goods and export goods. Such a result would mean that the Stolper-Samuelson income distribution effect goes into reverse. This would be most important in view of the previous discussion. Metzler first set out to find the exact conditions which would result in no change at all in the domestic price ratio between import prices (inclusive of the tariff) and export prices. This, according to Metzler, will be the case when the elasticity of foreign demand for the country's exports is exactly equal to the proportion of tariff proceeds *not* spent on imports.³¹ If, in other words, the sum of

31. If η_2 is the elasticity of foreign demand for the country's exports and k its marginal propensity to import we have what Metzler calls the "intermediate case" if $\eta_2 = 1 - k$. Metzler proves this proposition with the help of the Mill-Marshall type of diagram, assuming two countries Alpha and Beta trading in two commodities, wheat and textiles, under the assumption that Beta's reciprocal demand for wheat is inelastic. Alpha, imposing a tariff, improves its terms of trade and now has to give less wheat in exchange for more textiles. The extra gains from trade take the form of tariff revenue, a fraction k of which is again spent on imported textiles and the rest on no longer exported wheat. For the relative prices in the taxing country to be unaffected by the tariff, the additional demand for textiles must match the additional supply. It is sufficient to concentrate on one of the two commodities because reciprocal demand schedules present both a demand for one commodity and a supply of the other. Equilibrium in the one market therefore implies equilibrium in the other. If we now take τ to be the tariff, as a percentage, then $k\tau$ was spent on imports and the remainder, or $(1 - k)\tau$ was spent on wheat formerly exported. The additional demand for textiles is therefore $k\tau$. The additional supply of textiles may be derived from the additional wheat consumption in Alpha if we introduce β , the (negative) elasticity of Beta's reciprocal demand. This additional supply is then β times the additional wheat consumption in Alpha. We have therefore that $k\tau$ must be equal to $-(1 - k)\tau\beta$ (where β is negative). For this we may write $k = -(1 - k)\beta$. But we can translate β into η_2 , which is the elasticity of the ordinary money demand of Beta for Alpha's exports of wheat, according to the formula $\beta = 1 - 1/\eta_2$. This formula Metzler derives in his footnote 21 as follows: "Let t equal the quantity of textiles that Beta is willing to export, and let w represent that country's demand for imported wheat. The elasticity β of the reciprocal demand schedule is then $\frac{dt}{dw} \cdot w/t$. But the quantity t , from one point of view, is simply the

the foreign elasticity of the demand for our exports and our marginal propensity to import equals one, there is no incentive for the Labour-intensive import-competing industry to attract more relatively scarce Labour and the domestic distribution of income is therefore not affected. However, should this sum be smaller than one, then tariffs, so far from bettering the position of the relatively scarce factor, will reduce its income.³²

Metzler discussed the practical consequences of the results in some detail with special reference to the Australian case,³³ and pointed out the inconsistency of using, at the same time, the terms of trade argument and the redistribution of income argument (i.e. the less elastic the foreign demand for wheat and wool, the greater the possibility that the tariff will actually redistribute income at the expense of Labour).

In Metzler's own words "Paradoxical as it seems, the Australian manufacturing industries might be better 'protected' and receive more encouragement under free trade than under a system of protective tariffs".

The question arises whether Metzler's conclusions can be reconciled with the opinion of Heckscher and Ohlin that international trade always increases the demand for a country's relatively abundant factors.

Metzler himself thinks that his conclusions are essentially consistent with the views of Heckscher and Ohlin. The latter economists, according to Metzler, compare a state of trade with a state of no trade at all, whereas he compares trade with tariffs with a system of trade under smaller tariffs. In other words, Metzler points out that his argument is only valid for a certain range of tariff changes for which

total outlay of Beta for imports, w . In money terms, in other words, $t = \beta w$, where β is the import price of wheat. β may therefore be written $\beta = d(\beta w)/dw \cdot w/\beta w$. Upon simplifying and carrying out the indicated differentiation, this becomes $\beta = 1 + dp/dw (w/\beta) = 1 - 1/\eta$, the elasticity, η , being defined now in the Marshallian sense". We now have the following value for k : $k = -(1 - k) (1 - 1/\eta_2)$. This yields $\eta_2 = 1 - k$. If this condition is fulfilled the internal ratio between import prices (inclusive of the tariff) and export prices is unaltered by the tariff.

32. In arriving at these conclusions Metzler made use of A. P. Lerner's exposition in 1936. See A. P. Lerner: "The Symmetry between Import and Export Taxes", *Economica* New Series, Vol. 3, 1936. In an article called: "Tariffs, International Demand, and Domestic Prices", *Journal of Political Economy*, August 1949, Metzler further refined his formula. In order that the domestic ratio between import and export prices be undisturbed, the following more exact conditions must be satisfied, conditions which differ according to how the customs revenues are spent. The exact condition when customs revenues are entirely spent by the government

becomes $\eta_2 = 1 - k \left(\frac{1 + \tau}{1 + k\tau} \right)$. When tariff proceeds are entirely spent by private

traders, the exact condition becomes $\eta_2 = 1 - k \left(\frac{1}{1 + (1 - k)\tau} \right)$. The original approximate formula, which required that $\eta_2 = 1 - k$, is intermediate between these two exact conditions. This means that in the case where duties are largely spent by private traders η_2 will normally have to be somewhat larger. But, says Metzler, "considering the crudeness of most empirical estimates of demand elasticities, and considering, further, the difficulties in defining schedules of reciprocal demand rigorously, the approximation . . . is probably satisfactory for most practical purposes".

33. *The Journal of Political Economy*, February 1949, pp. 20-22.

the foreign demand for the country's exports has a certain degree of inelasticity. As tariffs move towards the level where they cut off all trade, sooner or later the foreign demand for one's exports must become elastic.

Metzler's revision of the Stolper-Samuelson principle, taking into account the effects on the terms of trade, was elaborated by A. Y. C. Koo in 1953.³⁴ Koo took matters further and followed up a suggestion made by Metzler, that the case where there are duty imports as well as non-duty imports should be investigated. He pointed out that the Stolper-Samuelson theory, even as revised by Metzler, still rests on the implicit assumption that imports consist of only one imported commodity to which the tariff applies. In other words, it is basically a two-commodity-approach. By introducing three commodities, two import-competing goods, one dutiable and one duty free, and the third an exportable commodity, Koo shows that the theory needs to be further amended. The Stolper-Samuelson-cum-Metzler results, he says, imply the assumption that in the duty-imposing country the domestic price of duty imports, including the tariff, must move in the same direction as the domestic price of non-duty imports. It is therefore important to know how the price of non-duty imports reacts to the tariff. Only this, combined with knowledge about the relative use of a country's scarce factor of production within the duty domestic industry—as compared with the non-duty domestic industry—will make it possible to determine the effect of a tariff on the domestic distribution of income.

VII

Recently, the Stolper-Samuelson theorem was criticized in an article by K. Lancaster.³⁵

Lancaster says that the Stolper-Samuelson theory as formulated does not make allowance for demand factors. His line of reasoning is as follows. Relative scarcity or abundance of factors of production is not merely a matter of physical endowment of those factors compared between countries. Countries may be of equal size and possess equal amounts of Capital and Labour and yet differences in their demand for Labour-intensive and Capital-intensive goods may make Labour the "scarce" factor in one country and Capital the "scarce" factor in the other. Quantitative differences in availability of factors do therefore not guarantee that under free trade those goods will be imported which use a larger proportion of the physically relatively "scarce" factor of production. On these grounds Lancaster suggests that the Stolper-Samuelson theorem be reformulated. Instead of "Protection raises the real wage of the scarce factor" he suggests "Protection raises the real wage of the factor which in the imported good is relatively more inten-

34. A. Y. C. Koo: "Duty and Non-Duty Imports and Income Distribution". *American Economic Review*, March 1953.

35. K. Lancaster: "Protection and Real Wages. A Restatement". *The Economic Journal*, June 1957.

sive". He says: "Protection will raise the real wage of labour if, and only if, the country imports the labour intensive good".

Although Stolper and Samuelson could perhaps have been somewhat more explicit on this point, I myself have never felt that relative "scarcity" of the factors "in the Stolper-Samuelson sense" was relative scarcity in the sense of physical endowment regardless of demand conditions. In the first place, Stolper and Samuelson based their discussion on the theory developed by Heckscher and Ohlin, which they took further. Ohlin did by no means ignore the influence of demand³⁶ but believed differences in endowment to be the more important factor in trade.³⁷ Stolper and Samuelson seem to share this belief. Although they may perhaps be accused of not explicitly mentioning the influence of demand, implicitly their scarcity criterion is based on the direction of trade which automatically incorporates demand influences. They say: "The introduction of trade will shift production in the direction of the good with 'comparative advantage'. According to the Ohlin analysis . . . this will be wheat which uses much of the abundant factor". Dr. Lancaster has drawn attention to the possibility of confusion through loose phrasing. However, there is little evidence in the literature that misunderstanding has occurred.³⁸

VIII

Having outlined the theoretical developments with regard to trade and the distribution of income, we may now turn to the problem of how relevant the theory is to protection in Australia.

The first question we may consider is whether in Australia the terms of trade effect is likely to have reversed a possible redistribution of income effect of the protective tariff, a result which Metzler himself considered quite possible. It is generally considered unlikely that on the import side Australia is important enough in the world market to be able to reduce world prices of its import goods to any appreciable

36. The following quotations from his book *Interregional and International Trade* may illustrate this:

Page 37: ". . . the uneven distribution of productive factors will, *unless it is balanced by a corresponding unevenness in demand*, tend to make the factor prices different in the various regions, and thereby bring about a certain division of labour and trade between them".

Page 39: A real explanation (of differences in costs of the factors of production) ". . . entails a study of the basic data of price formation, above all the relative abundance and scantiness of the endowment with the various factors in each region, *and as a rule also the conditions of demand*" (both quotations my italics).

37. Ohlin: *op. cit.*, p. 40: "The great inequality as regards factor equipment in the case of no trade means an enormous loss; for it is not balanced by a corresponding inequality in demand".

38. Compare for example Metzler in *The Journal of Political Economy*, February 1949, page 8: ". . . the scarce factor of production, i.e. the factor relatively most important in the industries competing with imports" and again, page 10: ". . . the scarce factors of production—those required in relatively large amounts in the import industries . . .".

extent by means of a tariff.³⁹ The opinion is also widespread that on the export side there are bound to be important terms of trade effects of a tariff in view of an inelastic demand for Australia's exports.

We have seen that Metzler reduced the problem of whether a tariff will cause a terms of trade effect to offset a Stolper-Samuelson redistribution effect to a simple formula. In the Australian case it could not cause this if the sum of the Australian marginal propensity to import and the foreign elasticity of demand for Australian exports equals or exceeds one. Clark and Crawford⁴⁰ estimated the marginal propensity to import to have been 0.21 in the 'twenties and 0.25 in the 'thirties. Whether the Stolper-Samuelson theory stands in the Australian case for the inter-war period would therefore seem to depend on whether the foreign elasticity of demand for Australian exports has been less than 0.75.

Although the elasticity concerned is quantitatively unknown, this does not mean that nothing can be said. Tariff policy with the aim of protecting manufacturing industry is basically a long-run policy and underlying Metzler's theory are the basic assumptions of internal and external equilibrium, i.e. full employment and balanced trade. Whereas it may perhaps be assumed that the short-run elasticities of world demand for Australian export products are low, this does not apply in the long run. If Australia should gradually protect more and more manufacturing industries and thus gradually attract resources away from primary production for export, this effect on world supplies has plenty of time to call forth adjustment. Marginal producers abroad would be drawn in, which results in a high (long-run) elasticity of foreign demand for Australia's exports. It is theoretically correct that a sudden increase in the overall level of tariffs could cause a considerable short-term improvement in the terms of trade, should the short-run elasticity of demand be very low. This could temporarily reverse an income redistribution effect. In practice such sudden increases are usually the result of emergency situations. The drastic increase in protection in 1929/30, for example, occurred during a period of unemployment and unbalanced trade. In spite of the tariff Australia's terms of trade became less favourable because the world depression had caused a relatively heavy downward shift in the world's demand schedule for Australia's exports.

If we turn from the past to the future, the question is whether a return to free trade is likely to worsen Australia's terms of trade to such an extent that such a policy, instead of hurting the factor Labour, improves its relative as well as absolute position, assuming that Labour is the factor that enters relatively most heavily into the

39. Compare for example W. M. Corden: "The Calculation of the Cost of Protection", *The Economic Record*, April 1957, p. 47: ". . . the import component of the terms of trade effect can be neglected". The fact, however, that in the past Britain, receiving imperial preference, has been Australia's major trade partner allows perhaps for some influence of the tariff on prices quoted by Britain.

40. Clark and Crawford: *The National Income of Australia*, Ch. XI, section IV.

production of import-competing goods. This would again require a low elasticity of foreign demand for the products of Australian soil. But once more, from a practical point of view, a return to free trade could only be a very gradual process so that overseas supplies of wool, wheat, etc., would have plenty of time to adjust themselves. All over the world marginal producers of such commodities would gradually drop out. The long-run elasticity of foreign demand would again be much higher than the short-run elasticity.

I believe, on the basis of these practical considerations, that Australian protection cannot have had the effect of improving the Australian terms of trade sufficiently to reverse a possible income redistribution effect. There is no evidence to support such an outcome and workers have kept on drifting to the cities.⁴¹ The belief that the terms of trade effect cannot have offset a possible redistribution of income effect of the tariff does not imply a belief that there has been no favourable movement in the terms of trade. As long as foreign reciprocal demand is less than perfectly elastic, tariffs can improve the terms of trade, provided that there is no retaliation.⁴² In this connection it is perhaps interesting to point out that if foreign reciprocal demand is elastic, a tariff will improve the terms of trade of the tariff-imposing country more if its own reciprocal demand is also elastic. A low elasticity of supply by Australia of the primary products that it exports, making for a less elastic Australian reciprocal demand, would then put the brakes on a favourable movement in the terms of trade.

The terms of trade effect of a tariff was discussed only because of the possibility of a clash between this effect and the Stolper-Samuelson redistribution effect. If it may be assumed—as I think it should—that such a clash is ruled out under Australian conditions, we must conclude that formally, in the Australian case, the Stolper-Samuelson theory is still applicable.⁴³ It is important to realize, however, that many simplifying assumptions underly this theory as originally presented, assumptions which were the same as those associated with the Heckscher-Ohlin theory. At the same time, as the authors themselves suggested, if interest is centred upon what happens in one country only, the redistribution effect of trade can to some extent be divorced from the Heckscher-Ohlin theorem. As Metzler has put it: “. . . any event, other than a change in technology, which leads to a shift in resources from one industry to another will increase both the real income and the relative income of the factor required in relatively

41. Such negative evidence however could be misleading. Monopolistic power of trade unions and progressive taxation could have made work in the cities more profitable. There is also the attraction of urban life.

42. Although this is perhaps not to be classified as “retaliation” attention may be drawn to the increasing agricultural protection in predominantly manufacturing countries particularly since the 'thirties.

43. The more realistic assumption of elastic foreign demand in the long run makes it unnecessary for our present purpose to enquire into the nature and price behaviour of non-duty imports since Koo's considerations can only reduce the possibility of a clash.

large amounts in the expanding industry".⁴⁴ In the Australian case we would therefore have to show that protection has shifted resources from primary into secondary industry and that Labour was required in relatively large amounts in the latter industry.

If we could assume that in the past Land and Labour were by far the most important factors of production and that a simple distinction could be made between primary production consisting mainly of export goods and secondary production being mainly in the import-competing field, the latter being also far more Labour-intensive, we would seem to be justified in concluding that there must have been a shift in income distribution in favour of Labour. Although this may perhaps seem a reasonable enough description of Australian conditions when protection was first applied we should not forget that Metzler's statement can only be given rigid content when there are not more than two factors of production involved. Even in the early days of protection we cannot overlook the factor Capital. Should Capital have been required, in the protected industries, in relatively even larger amounts than Labour, but both large compared with Land, Capital would have profited even more from the Tariff than Labour, both at the expense of Land.⁴⁵

It is obvious then, that if we introduce more than one factor of production, our footing becomes less certain⁴⁶ and it is tempting to investigate to what extent the Stolper-Samuelson theory has retained practical applicability under actual conditions in Australia since protection became an established policy. But it would seem more profitable under Australian circumstances to direct attention to two other assumptions that underly the analysis, namely unchanged technology and unchanged total amounts of the factors of production. These assumptions clearly illustrate that the analysis is purely a static one. However, it must be seriously doubted whether a static analysis is at all relevant to the tariff problem in Australia. In the short run a sudden increase in protection may well cause a redistribution of income although the effect may be difficult to disentangle from, for example, the effect of a world depression. But if we look upon Australian tariff policy as a long-run policy with the aim of gradually developing its secondary industry, our static model becomes irrelevant. Since protection the country has been in the process of increasingly rapid

44. *Journal of Political Economy*, Feb. 1949, p. 18. My italics.

45. This does not rule out a redistribution of such capitalist gains to Labour by other means such as taxation. Here we are only concerned with a redistribution effect of trade protection.

46. Stolper and Samuelson stressed this themselves. They say: "However, we must admit that three or more factors of production within a single country do seriously modify the inevitability of our conclusions. It is not only that the relatively scarce factor can be defined only circularly as the one whose price falls most after trade, but even if we do know the behaviour of relative factor prices, i.e. relative shares in the national income, it seems that we cannot infer unambiguously that the physical marginal productivities move in the same direction. Even though these continue to depend only upon the proportions of the factors in the respective industry, diverse patterns of complementarity and competitiveness emerge as possibilities".

economic development. The population has increased, production techniques in the fields of primary and other production have improved, capital has become more important in primary industry as well as manufacturing, and standards of living have risen in all sections of the community. In the long run redistribution of income as caused by a Tariff should not be regarded as a shift in personal incomes. Even if the Tariff should make farming less profitable and cause existing farmers a capital loss this will not affect the income of new entrants into the occupation. The latter will only enter farming if, on the basis of the lower land values, they can make as good a living on the land as elsewhere. In a growing economy even actual capital losses are not likely and all that can be expected is that additional capital and labour resources are relatively more attracted by other than primary production. As a percentage of total national income, farm income will fall, but individual farm income keeps in step with the prevailing standard of living. The tariff has tried to direct economic growth largely in the direction of manufacturing. If tariff policy is to be judged, it has to be on its success or otherwise in achieving this and on whether the encouragement of manufacturing has been an important stimulus to economic growth, resulting ultimately in higher real income per head.

The classical theory of comparative cost which supported the free trade doctrine was formally correct on its assumptions, which included high elasticities of demand and supply, pure competition and full employment. But it could never handle the infant industry argument for protection because this implied the dynamic factor of economic growth. If in Australia the encouragement of manufacture has stimulated economic growth and yielded external economies to its industries we have a dynamic argument for the tariff. This, I believe, the tariff has done. To link with such a policy essentially static income redistribution effects can easily lead to confusion as is evident from the literature on the Australian case in the 'twenties. I feel that more can be gained by regarding the Australian policy of protection in the past as an instrument for stimulating economic growth.

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ECONOMIC EXPERIMENTS IN NEW ZEALAND AND THEIR POLITICAL BACKGROUND

It happens very often that events catch up with the historian of contemporary developments. Sympathy rather than criticism seems to be called for in such cases. However, in his study of *Economic Experiments in New Zealand*,¹ Professor Condliffe presents a thesis which would appear to need amendment even if the march of political events in that country had not put a new complexion on the subject.

Professor Condliffe's study celebrated the election defeat in 1949 of a Labor Government which had been in office for 14 years. It was published last December in the same month that New Zealand voters reversed the process: after eight years in opposition the Labor Party (with a very slender majority) is in power again.

So far as Condliffe's article is concerned this would not matter very much if there were no doubt about his conclusions. As things are, however, there appears to be a danger that the reader who has no special knowledge of the case will mistakenly apply some of these conclusions not only to the interpretation of events up to 1949 but also to the evaluation of the policy of the present government of New Zealand. In particular, he might infer that New Zealanders who are said to have "rejected the further extension of intervention based on socialist principles"² in 1949, have now reversed that decision.

In fact the voters heard a great deal about "free enterprise versus socialism" from the National Party in both election campaigns; but the records of the two parties which in turn have ruled the country since 1945, and the circumstances of their election defeats, suggest that the issue of socialism had very little substance. The real issues were, I believe, the growing conservatism and comparatively austere financial policy of the Labor Government up to 1949; and, in 1957, its election platform based on tax remission plus old-fashioned protectionism. Apart from that, the label of doctrinaire socialism as applied to the New Zealand Labor Party does not check with the record—any more than the same label applied by Republicans to American Democrats. In New Zealand both parties when in power have used the same policy instruments on the same *ad hoc* basis to regulate economic activity, and if one is to be labelled socialist then there is a good case for applying the same label to the other.

What Professor Condliffe has done would be easy enough to understand if he had not, before becoming a distinguished American professor of economics, been the most eminent of economic historians in New Zealand. His main work in this field has enhanced the vigorous and scholarly tradition established by Pember Reeves, Scholefield, and

1. *American Economic Review*, December 1957, p. 930 ff.

2. *Ibid.*, p. 944.

others.³ In his new article he appears to apply preconceptions formed in the nineteen thirties to post-war developments.

1. *The Background*

In an admirable sketch of the background and performance of New Zealand's Labor Government from 1935 to 1945, Condliffe's latest article makes it clear that socialist doctrines expounded in earlier years when Labor was in opposition were not the basis of its policy as government. "The land was not socialized, nor farm nor factory production, nor banking";⁴ the socialist left wing of the party was all but wiped out, its leader, John A. Lee, first losing his ministerial office, then his seat in parliament, and finally his membership of the party.

Yet it does not emerge in Condliffe's account that the "economic experiments" amounted to no more than a full employment programme, strongly flavoured by New Zealand traditions, and at least as innocent of socialist aims as Keynes's *General Theory*. There was a new deal for farmers, similar in principle to the American price support programme but more conservative in that it turned out to be self-financing. Wage earners also had a new deal, and there was an expansion and modernization of public utilities and a comprehensive social security scheme. These changes appeared to have an adequate economic basis because of an increase in the volume of exports and an improvement in the terms of trade. (Exports then amounted to over a third of national income.) Full employment, in both Keynes's and Beveridge's interpretations of the term, was established in about three years. However, some of the measures adopted to deal with unemployment⁵ proved to be redundant, and a longer term effect has been a labour shortage which has persisted up to the present day.⁶ The absorption of the unemployed, and accelerated mechanization, resulted in an expansion of production at a rate closely approaching the rate of monetary expansion.

Exchange control and quantitative controls of imports were adopted in 1938 in the face of a balance-of-payments crisis. There is little evidence of the over-importation to which Condliffe refers as a cause of this crisis: it can be explained entirely by capital movements. Substantial short term balances had been held in New Zealand in anticipation that the Government would carry out its expressed intention of restoring the New Zealand pound to parity with the pound sterling.⁷ By this time it was evident that such a revaluation was

3. Condliffe, *New Zealand in the Making*, 1930; W. Pember Reeves, *State Experiments in Australia and New Zealand*, 1902; G. H. Scholefield, *New Zealand in Evolution*, 1908; W. P. Morrell, *New Zealand*, 1935.

4. *A.E.R.* article, p. 931.

5. Unemployment was running at about 10 per cent of the labour force in 1935-36.

6. The low birth rate of the early 'thirties and aging of the post-1918 stream of immigrants resulted in a decline in number of people of working age as a proportion of total population in the 'forties and up to a few years ago. This trend has now been reversed because of the rise in the birth rate and the high rate of post-war immigration. The falling average age of the population may have significant political and economic implications for the 'sixties.

7. Cf. *Economic Record*, 1939, New Zealand Supplement, especially articles by Condliffe, Belshaw and Sutch.

inconsistent with other (short run) policy aims. Consequently, encouraged perhaps by fear of inflation, speculators pulled out.⁸

In war-time these controls of foreign transactions were supplemented by price control, credit restrictions, and a comprehensive system for the control of manpower and other scarce resources. After the war, although the Labor Government had made some progress with the dismantling of war time controls by 1949 and the National Government carried the process somewhat further, the power to regulate imports and foreign exchange dealings has been retained. It has been used by each of the successive governments both to protect local industry and to deal with balance-of-payments difficulties. This, and the direction of monetary policy after the war, were Condliffe's main concerns.

2. *Post-war Developments*

Considered as the beginning of an epoch, the years 1945-49 in New Zealand's economic experience have quite a different complexion from that which they take on in Condliffe's account—where they are treated as the end of an epoch. They were, indeed, years of reconversion initiating a continuum of post-war experience. The fact that they were also the concluding years of a 14-year period of Labor rule appears now to have little economic significance.

Condliffe treats this period as a testing time for a long-term Labor policy which concluded with its rejection by New Zealand voters. He defines the policy as one of "intervention based on socialist principles" and says that it had "the ultimate goal of socialization based on monetary expansion". However, a close study of what happened in the context I have suggested reveals that this was a period of reconstruction in which war-time emergency regulations were relaxed and some progress was made towards working out a policy of economic development. For better or for worse a policy of gradual reconversion was decided upon and this policy, initiated by the Labor Government, was continued by its successors.

Conditions peculiar to New Zealand in this period can be explained partly by the degree of effectiveness of war-time wage and price stabilization. The idea of "total mobilization" was taken literally by New Zealanders, and this is reflected in the fighting record of their troops. On the economic front, stabilization of wages and prices, associated with the deferment of maintenance and development expenditures,⁹ enabled Britain to secure a major part of the imported requirements of some foods at a fraction of the price paid for com-

8. See Reserve Bank of New Zealand publication, *Foreign Exchange*, May 1952, esp. p. 28. As stated here, no official figures or estimates for the outflow of capital in the years 1935 to 1938 are available but unofficial estimates place the figure at approximately £20,000,000. This was just about the amount of the deficiency of overseas reserves of the banking system at the end of 1938 (compared with 1936 and 1937).

9. Both in the public and private sectors (and particularly in the field of local body expenditure) where the expenditures in question would not have been expected to contribute to the war effort.

parable goods from alternative sources.¹⁰ Restriction of imports also implied short term lending to Britain, and by the end of the war New Zealand's long-term foreign indebtedness was almost balanced by short-term credits in the form of accumulated sterling balances. Of course high taxation and public borrowing contributed to these effects.

In New Zealand (as elsewhere) there was a lot of talk about "winning the peace" by methods similar to those applied to war. But war-time borrowing by the Government, deferred maintenance and development expenditures, and the whole rationing system, were explicitly expedients of war which had a measure of effectiveness only because people were assured of a return, both as consumers and producers, to conditions of relative freedom. Voluntary acceptance of a considerable deterioration of the terms of trade, and a wholesale deferment of demand, go some way towards explaining difficulties of economic policy in the immediate post-war period.

Still, in New Zealand as in Britain, many problems which might ordinarily be expected to solve themselves through the interplay of market forces remained political problems. There had been little devolution of authority from ministerial level and there was no comprehensive research or administrative system for economic planning. Decisions which might, under different conditions, have been settled between buyer and seller, often had to be referred to a cabinet minister or even to parliament. As Condliffe suggests, the burden of government under such conditions must tend to become intolerable. Apart from that, a great deal of entrepreneurial effort was diverted to the political arena: political pressure could pay better dividends than enterprise in production.

Under the Labor Government there was some loosening of the controls which produced this state of affairs, and this process went further in the eight years of (nominally) conservative government which followed Labor's defeat. The National Government cannot be said to have reversed an "extension of intervention based on socialist principles". It continued, somewhat haltingly, the relaxation of controls, but it failed to move decisively in the direction of establishing conditions in which market forces could function effectively in their place.

3. *Monetary Experience*

A long tradition of government intervention in the New Zealand economy began with planned settlement in the early colonial days. It was sustained through the experience of public works development and planned immigration under the Vogel Government in the eighteen-seventies, and gathered strength in the 'nineties when the Liberals under Seddon carried through their land, labour, and "welfare" legislation.¹¹ Labor built on this tradition in the latter nineteen-thirties,

10. Compare, for instance, costs and quantities of butter, cheese and meat imported into Britain from New Zealand and alternative sources (including the United States, in which case cheese is a comparable product).—British Board of Trade, Monthly Reports.

11. Condliffe, *New Zealand in the Making*, gives an excellent account of all these developments. See also W. Pember Reeves, *op. cit.*

and the post-war National Government showed no sign of abandoning it.

However, the extent and persistence of economic regulation since the war and the exercise of ministerial discretion in administering it, are not fully explained by tradition. Constantly reinforced inflationary pressures have had greater immediate importance. Deferred demands and excess liquidity left over from the war economy could possibly have worked themselves out if either of the two post-war governments had "taken off the lid" and allowed the market to establish a new price structure and a new system of input-output relations after a period of open inflation. Neither was inclined to take the risk, and as long as the economy remained excessively liquid, the retention of some direct controls was the only alternative.

Inflationary pressures and policies designed to suppress the symptoms of inflation must have an important place in any explanation of contemporary economic experience in New Zealand. They partly explain the halting progress of both governments towards decontrol and the recurrent backsliding (with the reimposition of some controls previously relaxed) more particularly when balance-of-payments difficulties arose. At the same time, there has been a tendency among New Zealanders to regard the Prime Minister and Cabinet rather as chairman and directors of a board of management and to hold them responsible for the broad lines of production policy and the distribution of income. This tendency owes more to long tradition than the first Labor Government; and the National Government left the tradition intact.

The progress of inflation over the last four years of Labor rule and the first four under the National Government is indicated by the following table, in which the monetary expansion shown is to be related to a steady increase in the volume of output at a rate slightly under 5 per cent per annum:

*Net National Income at Factor Cost, Aggregate Transactions,
Money Supply, and Liquidity Ratios, 1946 to 1953*

| | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| | £m | £m | £m | £m | £m | £m | £m | £m |
| Income ¹² | 367.3 | 412.4 | 421.1 | 481.9 | 611.1 | 624.2 | 656.2 | 733.3 |
| Transactions ¹³ | 36.7 | 45.4 | 48.9 | 51.5 | 63.4 | 78.7 | 80.5 | 84.0 |
| Money supply ¹⁴ | 180.4 | 187.4 | 210.0 | 213.5 | 247.0 | 291.0 | 277.6 | 273.1 |
| Liquidity ratio ¹⁵ | 4.9 | 4.1 | 4.3 | 4.1 | 3.9 | 4.6 | 3.4 | 3.3 |

12. Official estimates, New Zealand Government *Year Book*, 1957.

13. Average for the year of weekly debits against demand deposits at banks. Reserve Bank *Bulletin*, monthly, Wellington.

14. Notes and coin in circulation and demand deposits at banks at the end of March in each year. Reserve Bank *Bulletin*.

15. i.e. balances held per unit of transactions settled. (In 1953, approximately £3.3 was held for every £1 per week debited from current accounts.) See *Report of the Royal Commission on Monetary, Banking and Credit Systems*, 1956, p. 467, for an index of velocity based on greater information. See also J. J. Polak, "Monetary Analysis of Income Formation and Payments Problems", *I.M.F. Staff Papers*, November 1957. My liquidity ratio varies inversely with transactions velocity. Polak uses income velocity which, in this period, increased at a lower rate than transactions velocity.

Analysis of the increase of the money supply carried out by the Reserve Bank for the period 1939-1950 showed that (a) the balance of external transactions, (b) Government transactions, and (c) the expansion of trading bank advances, contributed almost equal shares to the increase in overall liquidity. In the period covered by my figures, deficit financing by the Government had virtually disappeared as a contributory cause, and a falling trend of liquidity preference had become important.¹⁶ Tax revenue plus public borrowing showed a surplus over public expenditure in the last four years of the Labor Government, and the National Government maintained a similar surplus up to its last two years in office, so that the indebtedness of the Government to the banking system was reduced. Expansion of bank credit and (up to the recession after Korea) surpluses on account of external trade, maintained a high level of personal and institutional liquidity in spite of the disappearance of deficit financing of a type which directly increases the aggregate supply of liquid funds.

Subsequently, until a "credit squeeze" was applied in earnest in 1956, increasing bank advances on private account became relatively more important, particularly after Korea when annual surpluses on account of overseas trade tended to disappear. A high level of liquidity in the economy remained a constant source of actual and potential further inflation, the ratio of liquid balances to transactions having fallen by 1955 to 2.9, compared with a 1938 ratio of 2.55.¹⁷

Prices and wages rose slowly during the four post-war years of Labor Government. Condliffe writes of conditions in this period as "deteriorating into a leap-frogging competition among farmers, merchants, manufacturers, and trade unionists for higher prices and wages". In fact, this "leap-frogging" did not really get under way until the National Government was settled in office. This is shown by the following table:

Wages and Prices: Indexes for Period 1946-1957

(Base: 1955 = 100)¹⁸

| | <i>Wage rates</i> | <i>Retail prices</i> | <i>Wholesale prices</i> | <i>Import prices</i> | <i>Export prices</i> |
|----------------------------|-------------------|----------------------|-------------------------|----------------------|----------------------|
| 1946 | 56.3 | 62.3 | 62.3 | 70 | 47.7 |
| 1947 | 58.5 | 64.3 | 64.6 | 83 | 60.0 |
| 1948 | 62.4 | 69.4 | 72.0 | 85 | 66.6 |
| 1949 | 65.9 | 70.6 | 71.5 | 77 | 64.4 |
| 1950 | 70.5 | 74.6 | 77.9 | 84 | 91.0 |
| 1951 | 80.1 | 82.8 | 90.7 | 99 | 106.8 |
| 1952 | 84.2 | 89.2 | 100.8 | 108 | 85.9 |
| 1953 | 89.7 | 93.3 | 99.8 | 102 | 95.5 |
| 1954 | 96.6 | 97.6 | 98.9 | 100 | 98.5 |
| 1955 | 100.0 | 100.0 | 100.0 | 100 | 100.0 |
| 1956 | 101.9 | 103.5 | 103.8 | 102 | 97.5 |
| 1957 ¹⁹ | 106.4 | 105.6 | 106.3 | 108 | 99.0 |

16. Cf. Royal Commission's Report, p. 456 ff.

17. As defined for the purposes of the following table. This ratio was highly stable over the years 1934-40.

18. N.Z. *Monthly Abstract of Statistics*, October 1957.

19. For part of year. (November *Abstract* shows that quarterly indexes all rose slightly over first three quarters of year.)

Up to 1955 provision for general price control by a Government-appointed tribunal was maintained, decontrol having progressed since 1947-48 by the making of specific exemptions. In 1955 general price control was formally dropped as a function of the tribunal; although its powers ("to fix, in such manner as it thinks fit, actual, minimum, or maximum price for any goods sold . . ." ²⁰) remained unchanged, they were to be applied to specified goods only, not to goods in general with specified exemptions. The following year the power of exempting goods from price control was transferred from the tribunal to the Minister of Industries and Commerce. The range of goods subject to price control had been substantially reduced. Meantime import and exchange controls had been considerably relaxed in practice, though the Government still had power to proceed to any length; and each step towards the freeing of external trade from direct controls was generally followed by at least half a step back because of balance-of-payment difficulties.

The Reserve Bank, under the National Government, was attempting to make the remaining direct controls redundant by developing effective means of controlling credit. Cheap money had been Labor policy and the National Government also resisted pressure to allow interest rates to rise. This pressure increased from 1952 onwards because of the Reserve Bank's efforts to restrict the home supply of loanable funds, and because of hardening loan markets in other countries. In the long-term investment market Government borrowing remained the dominant force on the demand side, and Government lending through the State Advances Corporation (the largest source of housing finance) the biggest single factor on the supply side. Bank lending rates, and insurance company and building society rates, were also subject to direct regulation by the Government. However, even before the Government-controlled system of interest rates was made somewhat flexible, the cost of liquidity tended to rise slightly because some borrowers were diverted from lower-interest sources to higher-interest sources.

Later, more particularly after the Royal Commission on money and banking had reported to the Government, ²¹ a degree of flexibility was introduced into the interest rate pattern. Average rates increased appreciably, but Government control remained and the Government, while insisting that its policies to combat inflation were being pursued vigorously, continued to deny that higher interest rates were a necessary or desirable concomitant of such policies. ²²

Up to the middle of 1952 the Reserve Bank had relied on direct control of bank advances and the doubtful powers of exhortation. Its policy was (and still is) very much dependent on the approval of the Minister of Finance, though it had a greater measure of independence

20. Cf. New Zealand Official Year Book, 1957, pp. 962 ff., for the terms of the Act.

21. *Op. cit.*, Wellington, 1956.

22. Cf. *Monetary and Fiscal Policy in New Zealand*, Wellington, 1955, pp. 155 ff. (where an official statement on interest rate policy as presented to the Royal Commission by the Treasury, is reproduced).

in practice after the report of the Royal Commission. Till half-way through 1952 its nominal power to vary reserve requirements of the trading banks had not been exercised. This had meant that since 1945 the banking system (with fixed statutory minimum reserve proportions²³) had carried sufficient reserves most of the time to increase advances three- or four-fold. Then the effects of the minor post-Korean recession (including the effects of lagged tax payments on income for the boom year) reduced the excess liquidity of the banks and their customers. At this point ministerial approval was given to the use of variations in trading bank minimum reserve proportions, to be administered by the Reserve Bank approximately as they operate in the U.S. Federal Reserve system. The proportions were raised, with the effect that the five banks²⁴ now had, on an average, about twice the reserves they required to carry their existing level of deposits, instead of three or four times as much. Also in this year the Government set up a Capital Issues Committee (under war-time emergency finance regulations!), and the consent of this committee was required for capital issues over £10,000 in any 12 months' period.

Subsequently, variations in trading bank reserve requirements and high rates on advances to the trading banks by the Reserve Bank, brought the liquidity of the economy to a greater extent under the control of the monetary authority. Since 1956, although pressure has been relaxed at times when there have been signs of deflationary pressures becoming really effective,²⁵ Reserve Bank policy has been used to sustain a "credit squeeze".

However, the consequent restraint on expenditure in the private sector has been offset to some extent by expansion of public expenditure—especially in the last two years of the National Government when deficit financing in the special sense of the term as it has been used here²⁶ was revived.

Under these conditions—and particularly since export markets have weakened—a continued narrowing of the scope of quantitative controls of external trade and payments has been accompanied by chronic balance-of-payments difficulties.

4. *Conclusion*

The National Government has now passed on to its successors a balance-of-payments crisis and an armoury of discretionary powers which has been preserved virtually intact. The new Labor Government has not a working majority, but it did not need to get legislation through parliament in order to extend and tighten exchange and import controls and supplementary controls of economic activity. It

23. Namely, 7 per cent of demand liabilities and 3 per cent of time liabilities.

24. Each of the five trading banks has an extensive system of branches.

25. e.g. when annual payments of income tax have been due; and when difficulties have been encountered in the flotation of Government loans.

26. i.e. as stated above, deficit financing of a type which increases the liquidity of the economy. It implies a cash deficit, or an excess of public expenditure over revenue from taxation and public borrowing operations, and it has the effect of increasing the net indebtedness of the Government to the banking system.

simply applied, with greater force, the existing regulations as they had been applied in similar but less desperate situations in the previous eight years.

It was not a socialist platform which returned the Labor Government. In the matter of tax concessions, which had been a regular feature of annual budgets of the National Government, it simply made a higher bid. On the protection issue it did essentially the same thing. These were the main issues.

Both parties were committed to the protection of local industry, but the former government had persisted (in spite of periodic backsliding) with the removal of direct controls of imports by the exemption of specific types of transactions. It had reached a point where further progress in this direction was thought incompatible, unless tariffs were revised, with its protectionist policy. The *ad hoc* nature of this policy is brought out starkly by the following official statement:²⁷

No major changes were announced in the 1957 Import Licensing Schedule. Nine new items including tobacco pipes and a wider range of children's footwear were exempted from licensing if imported from non-scheduled countries,²⁸ and control was reimposed on men's nylon socks and women's and girls' ankle socks. Particular attention was paid to clothing because of imports from low-cost countries, and it was announced that licences for certain items would be granted on a quantity instead of a value basis. Further decontrol was not possible for 1957 as a stage was reached where 80 per cent of imports from non-scheduled countries did not require a licence. Any marked increase in liberalization will not be possible until the whole structure of import duties has been examined in relation to the needs of New Zealand industry.

Among manufacturers and wage-earners²⁹ there was considerable opposition to "liberalization" even in these terms. Labor offered a larger measure of protection, and the greater certainty of protection by means of quantitative controls.

Both Governments had, at times, used monetary expansion in such a manner that if it were continued it must have led to a continuing process of socialization; but, oddly enough, it was the National Government which devised the more effective means towards such an end. This was the combination of increasing government expenditure with a "credit squeeze" limiting private expenditure. This was bound to increase the share of national resources devoted to public enterprise, and this was its effect when, in the last two years of the late government, Reserve Bank policy achieved a measure of effectiveness. As a proportion of gross national product, central government expenditure was substantially reduced from war-time levels by the Labor Government, and while Labor remained in office local body expenditure was not allowed to rise appreciably above the low war-time levels. Under the National Government, central government expenditure was held fairly constant in relation to aggregate income and outlay,³⁰ but in-

27. New Zealand Official Year Book, 1957, p. 305.

28. i.e. countries outside the dollar area, excluding Japan.

29. For over 50 years, since wage arbitration on a national scale became firmly established, a community of interests between manufacturers who want a greater measure of protection and wage earners who want higher wages, has been a significant political factor.

30. See *Report of Royal Commission*, 1956, pp. 456-463; and *Abstract of Statistics*, monthly, October and November, 1957.

creasing expenditure by local bodies resulted in an appreciable increase in the relative importance of public enterprise.³¹

In spite of all these things Professor Condliffe is amply justified in his inference that the National Party is anti-socialist in its long-run intentions, and the Labor Party has socialist leanings. However, when the government (whatever its party background) is committed to certain specific long-run aims and limited by certain continuing economic trends, intentions of a general nature may have little significance except for platform purposes. This is certainly the case in New Zealand, where the government is continuously preoccupied with short-run issues arising in the context of a long-run process of population growth and industrialization.

Thus short-run problems of economic policy in New Zealand are generally placed in a context of rapid population growth and economic development. The government, whatever flag it flies, is in business to deliver the goods to the voters by the most effective means to hand. In these conditions—and in a small country with a relatively homogeneous population and a strong equalitarian tradition—public enterprise often appears to be the only means of “delivering the goods”.

At any rate this is the case as long as New Zealanders are determined to do things their own way and not rely on foreign investment or entrepreneurship, and as long as there is no highly developed home capital market. This goes some way towards explaining generations of government management (in part or in whole) of export marketing, railways, forestry, land development, electric power supply, medical and health services, and so on.³² It explains, too, some of the more conspicuous extensions of public enterprise under the late National Government as a response to an urgent demand for increased power supplies, improved road and rail communications, and manufacturing capacity to utilize the rapidly maturing State forests.

In some respects these are the problems of the relatively underdeveloped economy. Measures of income per head, degree of mechanization, and urban development, seem to indicate that New Zealand is one of the more advanced of modern economies. But in the absence of a capital market and a supply of entrepreneurship commensurate with the scale of investment required for the maintenance (with current standards of consumption) of the current rate of development, government initiative remains dominant.

This state of affairs dates from pioneering days when there was no apparent alternative. It endures and, by maintaining conditions unfavourable for the development to maturity of a private capital market and private entrepreneurship, tends to perpetuate itself.

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31. *Economic Survey*, 1955, '56 and '57; and *Abstract of Statistics*, June, 1957, pp. 10-11, September, 1957, pp. 7-11.

32. See Condliffe, *op. cit.* (*New Zealand in the Making*), Pember Reeves, *op. cit.*, and W. P. Morrell, *op. cit.*, for historical accounts of public enterprises in New Zealand.

THE GROWTH OF THE CEMENT INDUSTRY
IN THE 1920's:
A STUDY IN COMPETITION

1. *The Demand for Cement*

The use of Portland cement on a large scale has been a development of the twentieth century. After its discovery in the early nineteenth century, its widespread application waited upon the invention of the rotary kiln in the 1890's, which made possible a great reduction in cost as well as a standardization of product. The rise in consumption in Australia was remarkable. By 1913 it had reached 325,000 tons, then, after a decline during the war, it rose again to a peak for the 1920's of over three-quarters of a million tons in 1927-28.

A major source of this demand for cement lay with public authorities, particularly for such works as dams, irrigation channels and pipes, and water supply and sewerage.¹ By 1914 the Interstate Commission considered that the demands of the various State Governments had reached "exceptional proportions",² and these demands increased with the active developmental role played by governments in the 'twenties and the necessity of constructing a road system to cope with the flood of cars unleashed in this decade. In New South Wales, in the six years up to 1926, the consumption of cement for State purposes, including the requirements of the Public Works Department, the Metropolitan Board of Water Supply and Sewerage, the Sydney Harbour Trust and the Railway Commissioners averaged 60,000 tons per annum,³ while in one year, 1923-24, it was over 70,000 tons.⁴ If the other States consumed cement at the same rate per head as N.S.W., total demand from State Governments in the middle 'twenties would have been about 200,000 tons, or two-fifths of the total Australian consumption. These N.S.W. figures probably do not include cement purchases by local authorities, so that total purchases by public authorities would be higher by that amount.

1. Many of the cement products for public works were manufactured by private firms, which depended on government spending for their main market. Perhaps the most important was the principal manufacturer of concrete pipes in Australia, Hume Pipe Company (Australia) Ltd. The manufacture by this firm of centrifugally spun reinforced concrete pipes was based on a process invented by the brothers W. R. and E. J. Hume. The invention revolutionized pipe manufacture and the rights were sold throughout the world. (*Annual Reports, 1920-21 to 1929-30.*) One of the firm's subsidiaries placed such value on the inventive activities of W. R. Hume that it insured his life for £20,000. (*Hume Steel Ltd. Directors' Report, Year ended 30 September 1929.*)

2. *Interstate Commission, Tariff Investigation, Portland Cement Report, 26 May 1915, p. 4.*

3. *Report of Parliamentary Committee on Public Works on Proposed Works for the Manufacture of Portland Cement at a Site at Carlos Gap, 18 Nov. 1926, p. vii.*

4. R. T. Ball, Minister for Public Works, *N.S.W. Parl. Debates, 24 Sept. 1924, p. 2210.*

It was not only in the public sector that the use of cement increased. In the 'twenties the construction of buildings was revolutionized by the application of reinforced concrete. Until then, in Sydney at least, legislation had limited the use of this material,⁵ and the first building of reinforced concrete was not constructed there until 1919—this was Angus and Coote's premises facing the central entrance of the Queen Victoria markets.⁶ As the advantages of reinforced concrete and the technique of its construction became more widely known its use rapidly extended.⁷ In the cities it was also used in conjunction with another new building process—the steel frame—to erect the large buildings that high land values made necessary. Both these developments completely altered methods of building construction and opened new avenues for the utilization of cement.

The demand for cement, therefore, was much more buoyant than for traditional building materials such as bricks. It was supported from two sources: bricks relied principally on general private building, while cement found equal support from public investment. In the depression, of course, both these props were to prove weak. But in the 'twenties not only was the base for the demand broader, but the improvements in the quality of cement, the spread in knowledge of its usefulness and the increasing number of uses to which it could be put, meant that it was replacing other building materials as well as creating new demands.

Under these influences the consumption of cement expanded at a different pace and in a different pattern as compared with other building materials. For instance, brick output in the 'twenties grew to 807,000,000 in 1923-24, fell a little in the next two years and then reached a peak for the 'twenties of 838,000,000 in 1926-27, only slightly higher than the 1923-24 figure.⁸ Cement output, on the other hand, grew continuously from 1923-24 to 1927-28 and during this period increased by over fifty per cent.

In many uses cement is complementary to other building materials, but bricks and wood undoubtedly felt its effect as a competitive material. This effect is hard to demonstrate as inter-commodity competition was only one, and not the most important, influence on the price and output patterns of building materials. However, contemporary observers thought they saw the influences of this competition; for instance, in 1924, the *Age* noted with pleasure that the brick combine

5. As one contractor complained: "In Australia the use of cement is in its infancy; our builders are builders of iron, stone and brick. As far as Sydney is concerned, the Building Act forbids the economic use of reinforced concrete. Amend this Act, then our architects will soon show how great roomy buildings will be erected without such ponderous walls as are being erected in Sydney today." Evidence of James Angus, Appendix to *Interstate Commission Report, op. cit.*, p. 29.

6. *Australasian Manufacturer*, 3 May 1919, p. 20.

7. In the 20's the advantages of concrete over other building materials were seen to be in cost, strength, durability, maintenance and freedom from fire. See e.g. *Australasian Concrete*, Mar. 1921, p. 5, and *Australasian Engineer*, 31 July 1925, p. 5.

8. *Production Bulletin*, No. 23, p. 148.

in Melbourne had been forced to reduce its prices, and it thought that the prime reason must be "the use of reinforced concrete in the building of large premises".⁹ Also, although competition from cement would be felt mainly by bricks, Jobson, in discussing the depressed conditions in the timber trade, noted that "timber is not now as favoured as it was for buildings, and the preference for any construction of importance is for steel and cement".¹⁰

2. The Industry Before the War

To meet the rapidly rising demand, local production expanded to reach an estimated 200,000 tons by 1913.¹¹ Official statistics are few, but a picture of this growth can be given for New South Wales; there, production was 13,400 tons in 1902, 68,333 tons in 1908, 108,390 tons in 1911 and 127,981 tons in 1913.¹² However, notwithstanding the expansion of their plant, local manufacturers were unable to meet the demand, and imports grew from 25,700 tons in 1907 to 125,600 tons in 1913.¹³

The local industry had the double protection from overseas competition of a high tariff and the high transport costs of cement. The importance of this protection in 1913 can be seen in the table below:

Imports of Portland Cement

| | Origin | |
|---|-------------|----------------|
| | Continental | United Kingdom |
| F.o.b. cost per cask | 5/- | 5/- |
| Freight and other charges | 3/6 | 4/3 |
| | 8/6 | 9/3 |
| Duty | 3/4 | 2/6 |
| On wharf at Sydney per cask | 11/10 | 11/9 |
| Thus freight, etc., as percentage of f.o.b. value . . | 70% | 85% |
| Thus duty as percentage of f.o.b. value | 66.7% | 50% |

Source: *Interstate Commission Report, op. cit.*, p. 3.

With such a high level of protection, local manufacturers were in a favourable position, and it was only because of their inability to expand at a sufficient rate that imports were continued. The price of imports was used to set the price in the market; thus the secretary of the Commonwealth Portland Cement Company stated that "our policy has always been to keep just under the imported price".¹⁴ This sellers' market meant that the price of cement in Australia was over double that in the United Kingdom, and that there was no inducement for

9. *Age*, 10 Sept. 1924, p. 9.

10. *Jobson's Investment Digest*, Aug. 1928, p. 388.

11. *Interstate Commission Report, op. cit.*, p. 4. The Commission considered that this figure was calculated with "fair accuracy".

12. *Annual Report of the Dept. of Mines, N.S.W., for the Year 1918*, p. 49.

13. *Overseas Trade Bulletins*, Nos. 5 and 11.

14. *Interstate Commission Report, op. cit.*, p. 5.

Australian producers to compete amongst each other. In New South Wales there were two producers: the Commonwealth Portland Cement Co. Ltd. with an output of around 100,000 tons and Goodlet and Smith, a much smaller producer. These two companies had a "loose arrangement" as to price, and always knew each other's quotes for government business.¹⁵

This market situation made cement manufacture a very profitable undertaking, and just before the war several new firms entered the industry. Although the war reduced import competition to a minimum, the demand for cement also fell since there was a decline in the quantity of public works and building. However, the new entrants in the industry did not drastically upset the relationships between the firms; the Interstate Commission in 1919 found "there is no formal agreement between the cement manufacturers, but there is an understanding between the principal manufacturers and they fix prices".¹⁶

3. *The Growth of the Industry in the 'Twenties*

Output figures are available for New South Wales during the 'twenties, but they were collected for the Commonwealth as a whole only from 1923-24. Even after that year there are no separate statistics published for the other States.

Cement (000 Tons)

| Year | Output | | Imports | Consumption ¹ |
|---------|------------------|----------|---------|--------------------------|
| | N.S.W. | C'wealth | | |
| 1919-20 | 92 | n.a. | 6 | n.a. |
| 1920-21 | 160 | n.a. | 27 | n.a. |
| 1921-22 | 163 | n.a. | 24 | n.a. |
| 1922-23 | 201 | n.a. | 45 | n.a. |
| 1923-24 | 224 ² | 492 | 29 | 521 |
| 1924-25 | 272 ² | 578 | 26 | 604 |
| 1925-26 | 306 | 605 | 23 | 628 |
| 1926-27 | 365 | 638 | 19 | 657 |
| 1927-28 | 432 | 754 | 23 | 777 |
| 1928-29 | 415 | 708 | 22 | 730 |
| 1929-30 | 423 | 697 | 15 | 712 |

1. Consumption taken as output plus imports.

2. Calendar year ended six months previously.

Sources: N.S.W. output from *N.S.W. Statistical Register*, 1919-20 to 1929-30, and *N.S.W. Official Year Book*, 1926-27, p. 346. Commonwealth output from *Production Bulletins*, Vols. 18 to 24.

Imports from *Overseas Trade Bulletins*, Vols. 17 to 27.

The growth in output for the Commonwealth was rapid; it increased by roughly one half in the four years between 1923-24 and 1927-28, and probably increased about threefold between 1920 and

15. *Ibid.*, p. 4.

16. *Interstate Commission, Prices Investigation, No. 12 Report, Rents*, 24 Apr. 1919, p. 34.

1927-28. New South Wales was the most important State, producing over half the total output. Local production met nearly all the demand and imports were limited to certain high-grade cements.¹⁷ The exclusion of imports was assisted by the freight and by a high tariff of B.P.T. 1/-, I.T. 1/-, G.T. 1/6 per cwt., which had been imposed originally in 1914. Because of the war it had not been needed and it was left unaltered in the general tariff adjustment of 1920 at the request of the cement manufacturers, not because they thought it unimportant, but because they thought it was already sufficient to exclude foreign competition.¹⁸

The expansion in production was the result both of the growth of existing firms and of new firms entering the industry. The profits of established companies were very satisfactory and acted as a strong inducement to new firms. For instance, Kandos Cement Co. Ltd. paid 10 per cent dividends for every year of the 'twenties;¹⁹ after it became a public company in 1924 Australian Cement Ltd. paid between 10 per cent and 15 per cent,²⁰ while the Adelaide Cement Co. Ltd. between 1921-22 and 1929-30 normally paid 15 per cent and also made a bonus share issue in 1924-25 of £55,000 to a shareholders' capital of £126,000.²¹ However, entry into the cement industry was not easy, since large amounts of capital were needed and the established firms were formidable prospective rivals.

In New South Wales, at the beginning of the decade, there were two companies in existence and these remained the major producers. The Commonwealth Portland Cement Co. was a private company in which the entire shareholders' funds were held in England; by 1928 these funds amounted to £600,000, assets were £1,448,000 and the capacity of the works at Portland was about 200,000 tons per annum.²² This company remained the only one in which there was a substantial foreign shareholding. Kandos Cement Company Ltd. was roughly the same size and its works at Kandos also had a capacity of about 200,000 tons per annum.²³ Three other companies were established in New South Wales to manufacture cement. One was the Standard Portland Cement Co. Ltd. which began production in 1926-27,²⁴ and which had a capacity of about 100,000 tons.²⁵ This firm was also at Kandos, so that Commonwealth, Kandos and Standard were all on the Mudgee railway line,

17. *Parliamentary Standing Committee on Public Works, op. cit.*, Minutes of Evidence, p. 4, Evidence of G. W. Mitchell, General Manager, State Industrial Undertakings.

18. Statement by W. M. Greene, Minister for Trade and Customs, *Parliamentary Debates*, Vol. XCV, pp. 9126-27.

19. *Kandos Cement Co. Ltd., Directors' Reports*, years ended 30 June 1921 to 30 June 1930.

20. *Australian Cement Ltd., Directors' Reports*, years ended 30 November 1925 to 30 November 1930.

21. *Adelaide Cement Co. Ltd., Directors' Reports*, years ended 31 May 1920 to 31 May 1930.

22. *Jobson's Investment Digest*, Mar. 1928, p. 106.

23. *Ibid.*

24. *Standard Portland Cement Co. Ltd., Directors' Report*, year ended 30 June 1927.

25. *Jobson's Investment Digest, loc. cit.*

Portland being 112 miles from Sydney and Kandos 154. In this area the necessary raw materials—limestone, shale and coal—were all adjacent to one another as well as being close to transportation by rail. The two other New South Wales cement works were established by powerful companies whose major interests lay outside this industry. The Sulphide Corporation Ltd. had refining works for base metals at Cockle Creek; there it established cement works which, by the end of the decade, had a capacity of about 100,000 tons.²⁶ Southern Portland Cement Ltd. was situated at Berrima and was formed jointly by Australian Iron and Steel Ltd. and Howard Smith Ltd.; it began production in 1929 and capacity was scheduled to be 120,000 tons.²⁷

In Victoria there was virtually only one producer, Australian Cement Ltd., with works at Fyansford, near Geelong. This company was formed in 1925 to take over an existing company, Australian Portland Cement Co. Pty. Ltd., and its capacity towards the end of the 'twenties was about 200,000 tons.²⁸ Alarmed by the development of new companies in New South Wales the company made a policy of consistently maintaining capacity in excess of demand so as to discourage potential competitors.²⁹

The size of the companies was much smaller in the other States. In South Australia there were two established companies—Adelaide Cement Co. Ltd. (40,000 tons) which began production in 1914, and South Australian Portland Cement Co. Ltd. (30,000 tons), dating back to 1891. In Queensland there was only one firm—Queensland Cement and Lime Co. Ltd. (55,000 tons), which began production during the war.³⁰ In Western Australia, the Western Australian Portland Cement Co. Ltd. was formed in 1918 and produced its first cement in 1920; in 1927 it was reconstructed into a new company—Swan Portland Cement Ltd.

It was in Tasmania that the only unprofitable cement venture took place. National Portland Cement Ltd. was established at Maria Island off the east coast of Tasmania and began production there in 1924. For several years in the mid 'twenties production averaged around 30,000 tons, but there were continual difficulties and operations finally ceased in 1929.³¹ In a general way, the firm suffered from the failure of Tasmania to develop as rapidly as expected, but there were also more particular setbacks: the cost of establishment exceeded estimates, delivery of machinery was delayed and the first limestone quarry opened up proved faulty.³² Almost all the shareholders' funds were lost in this undertaking. When the works were ultimately sold to Australian

26. *Ibid.*

27. *Ibid.*, Sept. 1928, pp. 397-8.

28. *Ibid.*, Mar. 1928, pp. 106-7.

29. *Australian Cement Ltd., Directors' Report*, year ended 30 Nov. 1925.

30. Capacity estimates given in brackets relate to 1928 and are from *Jobson's Investment Digest*, *loc. cit.*

31. See *National Portland Cement Ltd., Directors' Reports*, years ended 30 June 1923 to 30 June 1928.

32. Report in *Melbourne Herald*, 3 Oct. 1928. A press cutting seen at the Melbourne Stock Exchange.

Cement Ltd., payment was made in the latter's shares and amounted to only 1/9 in the pound on £100,000 preference shares and 8d. in the pound on £279,000 ordinary shares.³³ Another small Tasmanian company, Tasmanian Cement Pty. Ltd., began production in 1925 at Railton in Northern Tasmania, where over £200,000 had been invested in plants for cement manufacture and shale oil retorting.³⁴ However, in 1924, agreement had been reached with Dorman, Long and Co. Ltd., the English firm in charge of the construction of the Sydney Harbour Bridge, by which Dorman, Long took over the management of the firm, invested "a large sum of money in the works", while the firm became responsible for the supply of cement for the bridge.³⁵ The output of the firm was not large, reaching about 25,000 tons per annum by 1928.³⁶ In that year the firm expanded into a public company, Goliath Portland Cement Co. Ltd. and Dorman, Long continued to direct the management.³⁷ Capacity of the plant was increased to 135,000 tons by 1930,³⁸ and it was the intention of the company to sell a large proportion of this cement on the Melbourne market.³⁹

4. *Technological Development*

Portland cement came into popular use with the development of the rotary kiln about the turn of the century. Subsequent technical developments within this industry up to 1930 included a great increase in the size of the rotary kilns, a reduction in fuel consumption, mechanization of the production process, including quarrying, packing and distribution, and the creation of new types of cement for special purposes.⁴⁰ These innovations had their origins abroad, but it seems that the Australian industry quickly adopted them. The rapid growth of the industry in the 'twenties meant that most of the equipment was up to date; new firms established themselves with new plant while the profits of the established firms enabled them to make very adequate provision for replacement. That the new equipment purchased was of the most modern type was assured by the position of the firms supplying the equipment. This industry was dominated by a few large firms which kept a leading position in the development of technology for making cement, and provided buyers with designs for new factories and the technical knowledge for production.⁴¹

33. *Jobson's Investment Digest*, Dec. 1929, p. 731.

34. *Age*, 30 July 1925, p. 11.

35. *Industrial Australian & Mining Standard*, 30 Oct. 1924, p. 639. It is not known how much money was invested by Dorman, Long in the original company in 1924, but in 1934, out of 255,857 ordinary shares of Goliath, Dorman, Long held 22,578. (Shareholders' List at Melbourne Stock Exchange.)

36. *Prospectus of Goliath Portland Cement Company Ltd.*, 31/7/1928.

37. *Argus*, 17 July 1928, p. 14.

38. *Jobson's Investment Digest*, Oct. 1929, p. 555.

39. *Ibid.*, Sept. 1928, p. 400.

40. See e.g. Ingar Svennilson, *Growth and Stagnation in the European Economy* (United Nations Publication, 1954), p. 156.

41. *Ibid.*, pp. 156-7.

Rotary kilns were operated in Australia as early as 1908 by the South Australian Portland Cement Co.,⁴² and it is possible that the two main companies in Victoria and New South Wales had them even earlier. All further installations were of this type, and the development in their size was most marked. The attitude of one of the older companies to technical development can best be shown by this description of its works:⁴³

A contract has been let by the Australian Portland Cement Co. to the Monier Concrete Co. to build four silos at the terminus of the Fyansford railway for the storage of the company's cement. Each silo will be 75 feet in height, with a diameter of 35 feet, and will have a capacity of 1,500 tons. The cement company's packing house will be alongside, and will be equipped with machines capable of bagging the cement at the rate of $2\frac{1}{2}$ tons per minute. The silos will be automatically filled with cement by means of conveyors from the works. The cost of the new silos, about £20,000, is only an item in the expenditure which the cement company has in view. Its policy has always been to keep ahead of the demand, and while the output has increased twentyfold in the last eighteen years, the plant has been entirely replaced by improved machinery on three occasions within that period, and it is contemplated by the directors to lay out about £250,000 during the next two years in effecting further improvements.

In the cement industry capital costs per unit of output were always high, while labour costs were low, and the ratio between the two was further increased by the mechanization of production which was taking place in the 'twenties.⁴⁴

An outstanding development in the industry was the production of a quick hardening cement. This new type of cement greatly affected the uses to which cement could be put, since in two or three days it gave the strength only obtained from ordinary cement in three or four weeks.⁴⁵ Production began in Australia in the last few years of the decade, and brands of cement blossomed with such names as "Celerite", "Speedite", "Quickardo", "Rapidite" and "Rapidard".

A distinct advance was made in cement packaging through the development of paper bags as an alternative to jute. It was claimed that paper bags were cheaper, gave better protection against the weather and were more convenient to handle.⁴⁶ Production was begun in 1926 by an Australian company, Bates (A/Asia) Ltd., which used wholly Australian raw materials to produce a multi-walled bag "composed of five separate walls of tough pliable water-resisting paper—bound, glued and sewn on top and bottom".⁴⁷

42. *Brighton Cement Handbook 1892-1952* (issued by the South Australian Portland Cement Co. Ltd.), p. 7.

43. *Age*, 7 Jan. 1924, p. 5.

44. See e.g. the evidence of F. E. Morton, Engineer of Australian Cement, in evidence to the Commonwealth Arbitration Court in *Amalgamated Engineering Union and Others v. Metal Trades Employers' Association and Others*, 7/8/1929, Transcript of Evidence, p. 3808. ". . . we have been spending a great deal of money on the works in one way or another. We have been improving them and we find that we want fewer men, and that will be more so in the future."

45. For a general description of the development of quick hardening cement, see evidence of G. W. Mitchell to *Parliamentary Standing Committee on Public Works, op cit.*, p. 3.

46. *South Australian Portland Cement Co. Ltd., Directors' Report*, half-year ended 30 June 1927.

47. Advertisement in *Adelaide Advertiser*, 26 July 1927, p. 17.

5. *Excess Capacity*

The cement industry is one in which excess capacity typically arises. Rapid technical improvements have meant a high rate of obsolescence for existing equipment, but after amortization old equipment may still be capable of operation because of the very low labour costs per unit of output. Technical improvements have increased also the size of kilns; some in Australia had a capacity of over 50,000 tons by 1930 and these kilns, of course, required 24 hours a day and seven days a week operation for maximum efficiency. In addition, seasonal and cyclical fluctuations are important general causes of excess capacity, but in Australia the seasonal fluctuations in building are not important because of the mild winters, while in the 'twenties excess capacity began to develop in a period in which demand was growing.

However, apart from the technical developments in the industry, there were some special factors in Australia which encouraged the development of excess capacity. One was the division of the country into six separate States, in each of which the economy and economic policy were, in some degree, different from the others. Cement factories were set up in each of the States, and this was probably warranted by the pattern of population and the freight on cement. It meant, however, that the natural tendency to excess capacity was encouraged in six separate places. The establishment of the cement works in each State was further encouraged by the preference often given by State authorities in their contracts to local factories. For example, in 1926, a considerable stir was caused by the allotment of a Victorian contract to companies established in New South Wales and Tasmania; it was claimed that in retaliation against these States for discriminatory practices, one-third of the contract should be allotted to a Victorian company.⁴⁸ Again, in 1927, the sewerage committee of the Melbourne and Metropolitan Board of Works recommended sharing a contract between five tenderers, three of which were interstate. The Board, however, overruled the committee and allocated the contract to the two Victorian companies.⁴⁹

It was natural, too, that in each State existing firms should deliberately create excess capacity in order to discourage potential rivals from establishing a business there. This was the admitted policy of Australian Cement,⁵⁰ while in 1923 Kandos hopefully stated that additional machinery had been installed "giving an output which will meet the probable requirements of the State for some considerable time".⁵¹ The Queensland company expressed the same hope.⁵²

Excess capacity was encouraged also by the fact that public expenditure and building construction behaved in a different fashion in

48. *Argus*, 27 Oct. 1926, p. 24.

49. *Ibid.*, 31 Aug. 1927, p. 23.

50. *Australian Cement Ltd., Directors' Report*, year ended 30 Nov. 1925.

51. *Kandos Cement Co. Ltd., Directors' Report*, year ended 30 June 1923.

52. *Queensland Cement and Lime Co. Ltd., Annual Report*, year ended 31 July 1922.

the various States. For example, building continued at a high rate in the final years of the 'twenties in Sydney. Cement output in New South Wales did not reach a peak until 1927-28 and then remained practically constant until 1929-30. In South Australia, on the other hand, economic difficulties were pronounced after 1926-27, and the output of cement of the South Australian Portland Cement Company fell steadily from 26,741 tons in 1926-27 to 13,501 tons in 1929-30.⁵³

As well as the division of Australia into separate States, the optimistic expectations of the local producers led to the provision of capacity in excess of the demand. Cement was in short supply for the first years of the 'twenties and, as recent experience in the coal industry has demonstrated, it is easy to over-estimate the size of a shortage. Undoubtedly this caused manufacturers to expand capacity beyond actual requirements while, at the same time, since plans were based also on the rapid rise of demand in the past, even a slowing down in this rate would disappoint expectations. Further, as will be shown below, the price policy of the existing firms induced new firms to enter the industry.

How great was this excess capacity and at what rate did it develop? Capacity is extremely difficult to define and more difficult to measure even where an abundance of statistical material is available. In Australia there is no such material, so the treatment of this subject must be in general terms. Cement was in short supply for the first few years of the decade and manufacturers found it impossible to meet the demand. This condition persisted into 1922 and for the next two years there appears to have been a rough balance between supply and demand, until the possibility of over-production began to appear about the end of 1924.⁵⁴ In June, 1925, when output was at the rate of approximately 600,000 tons per annum, the chairman of Australian Cement Ltd. claimed that the plant capacity of Australia could produce 785,000 tons.⁵⁵ By the middle of 1926 the *Industrial Australian and Mining Standard* estimated that capacity had risen to 831,500 tons and there were a further 160,000 tons under construction.⁵⁶ These figures suggest that excess capacity began to develop in the industry from about the middle 'twenties. The problem was not acute as long as demand rose quickly, as it did until 1927-28, but growth then ceased at the same time as two new companies placed their product on the market. It seems probable that by 1930 the industry could have produced 1,000,000 tons with ease but the output in 1930-31 was only 389,000 tons.

6. *Co-operation within the Industry*

Problems of excess capacity in the cement industry throughout the world have normally been met by some form of agreement limiting competition. The industry in Australia was no exception. Even before

53. *Brighton Cement Handbook*, *op. cit.*, p. 14.

54. See e.g. *Argus*, 20 Nov. 1924, p. 15.

55. *Industrial Australian and Mining Standard*, 4 June 1925, p. 741.

56. As reported in *Jobson's Investment Digest*, June 1926, pp. 307-8.

the beginning of the decade of the 'twenties the principle of co-operation by the firms within the industry in fixing prices was firmly established. As long as local industry did not have the capacity to meet the demands of the market, as was the position before the war, imports were the price leader and co-operation was easy. This situation continued for the first few years of the 'twenties. It was not until the end of 1924, when over-capacity began to appear, that co-operation raised problems. The emergence of excess capacity was, in part at least, the result of the successful co-operation between the existing firms in keeping prices at a high level and thus inducing new firms to enter the industry. The manager of the Commonwealth company had to agree with a member of the Tariff Board when he stated: "What I am putting to you is not original . . . they [i.e. the new companies] came into existence because the flowers were blooming too prolifically, so to speak. The thing appeared to be too attractive".⁵⁷ On the other hand, although co-operation encouraged the emergence of excess capacity, the excess capacity itself made co-operation all the more necessary for the firms involved.

In New South Wales the relation between price co-operation and the entry of a new firm into the industry was quite direct. In this State the two producers, the Kandos and Commonwealth companies, were faced with a powerful buyer, which, because of the large amounts of cement it consumed, was in a position to bargain. This buyer was the State Government. At the end of 1920 the Dooley Labor Government entered into a contract with the Commonwealth company for the supply of cement at the rate of £5/8/- per ton. In 1924, in defence of the price, Mr. Dooley claimed that in 1920 cement was almost unprocurable, and that the cheapest price on the market was £8/10/- per ton, while some was being sold at £10 and £11 per ton.⁵⁸ The difficulty concerning price in 1920 was not disputed, but the contract had other objectionable features. Delivery did not start until 17 months after the contract was made and it then operated for two years, except on certain public works where it had to be used until the job was completed.⁵⁹

With the expiration of this contract in 1924, tenders were called for the supply of cement at the rate of 50,000 tons per annum and the two existing New South Wales companies submitted almost identical tenders. Although some conditions were different, each required a five-year contract with adjustment for any wage changes, but the unacceptable feature of their tenders was the price. The Commonwealth Company's price was £4/11/6 per ton free on rail at Portland, while the Kandos Company's price was £4/4/2 free on rail at Kandos. The difference between the two prices would be much smaller when allowance is made for the higher freight from Sydney to Kandos, and both

57. *Tariff Board Supplementary Report on Portland Cement*, 6 Mar. 1936, p. 4.

58. *N.S.W. Parliamentary Debates*, Vol. 97, 3 Sept. 1924, p. 2151.

59. Statement by R. T. Ball, Minister for Public Works, *ibid.*, p. 2162.

prices would probably have been a little over £5 a ton delivered in Sydney.⁶⁰

The State Government took the view that the tenders were far too high and that no real competition was taking place between the two companies. It therefore took the unusual step of allotting the contract to a company which was formed solely in the hope of obtaining the contract and whose main assets were the rights to the raw material. This company was Cement Products Ltd., and after obtaining the contract it proceeded to float Standard Portland Cement Co. Ltd., with the contract as its main inducement to investors, while it sold its assets to the new company for 75,000 shares.⁶¹ The contract was for three years and was at the price of roughly £3 a ton free on rail at the works near Kandos and £4 a ton delivered in Sydney.⁶² Allowance was made for wage changes, but the price was at least £1 a ton below the tenders of the two established New South Wales companies.

Co-operation between the existing companies continued. The Standard Company did not start production until January, 1927, and then most of its output was absorbed by the government contract. Sulphide Corporation began production in April, 1925, but only at the rate of 30,000 tons per annum and output was not expanded for another two years,⁶³ Thus for a Victorian Government contract in 1926 there were three tenders, all the same price;⁶⁴ and again in 1927 with five tenders, prices were equal.⁶⁵ However, the outlook for price co-operation began to look more difficult in 1928: existing companies had expanded capacity, Southern Portland Cement was soon to begin production and the Goliath company had been formed in Tasmania with eyes on the Melbourne market. With these developments in mind the chairman of one of the major companies warned against a price war.⁶⁶

Today we are holding our cement prices at a steady level. The Kandos Company is making its price a standard price—with concessions for such public utilities as roads—and is keeping it there. The company will not declare a cement price-cutting war. We will keep our prices up. If our competitors force us into a corner, which is unlikely, since there is harmony in the cement industry, we shall be in a position to meet that contingency.

New competitors did, however, accommodate themselves to this harmony. In June, 1930, the New South Wales Minister for Local Government stated that he had to accept a price from the "Cement Association" of £4/2/- per ton f.o.r. at any of the cement works in the State, or £4/17/6 delivered in Sydney, irrespective of the origin of the cement.⁶⁷ When the New South Wales Government contract came up

60. *Ibid.*, pp. 2208-9.

61. Standard Portland Cement Co. Ltd. Prospectus, as reported in *Jobson's Investment Digest*, Apr. 1924, p. 152.

62. R. T. Ball in *N.S.W. Parliamentary Debates*, Vol. 97, p. 2211.

63. *Jobson's Investment Digest*, Mar. 1926, p. 119.

64. *Argus*, 27 Oct. 1926, p. 24.

65. *Ibid.*, 31 Aug. 1927, p. 23.

66. Mr. Stewart, Chairman of Kandos Cement Co. Ltd., *Sydney Morning Herald*, 22 Aug. 1928, p. 17.

67. M. F. Bruxner, *N.S.W. Parliamentary Debates*, Vol. 123, p. 6080. "Cement Association" were the words used by Bruxner; for a discussion of this Association, see below.

for renewal, this time at the rate of 65,000 tons per annum, the Standard company again refused to fall in line. The Sulphide, Southern, Commonwealth and Australian companies all tendered the same price, but the Standard company tendered a price which was lower in Sydney by 4/- to 6/- a ton, and obtained the contract.⁶⁸

By what procedure did the manufacturers reach agreement on prices? The only formal merger of interests was between two of the three largest producers. In December, 1929, Kandos Cement Co. Ltd. and Australian Cement Ltd. combined to form Australian Portland Cement Pty. Ltd., as a holding company controlling the two operating companies. Until this merger Kandos had been a large supplier of the Victorian market, but its profits had been absorbed by the freight and handling charges. After the merger, all Victorian orders on the company were supplied from Geelong.⁶⁹

The formation of an organization of a different kind took place in 1928 when all the cement manufacturers, except the Swan Company in Western Australia, formed The Australian Cement Manufacturers' Association. According to the memorandum of association, its object was "to promote encourage foster develop and protect by lawful means the cement industry, and to further and develop the use and demand for cement generally".⁷⁰ The cement manufacturers strenuously denied that the Association had anything to do with price fixing and, after studying its activities in the early 'thirties, the Tariff Board accepted this argument. But the Board found all the evidence of a firm agreement—including the division of the market between the manufacturers in the same proportion as they held before the depression—and it concluded that the only way to reduce the price was to lower the tariff and permit import competition.⁷¹ There appears, then, to have been little or no formal machinery with which prices were controlled; probably, as one manufacturer claimed, it was a mixture of price leadership and "gentlemanly understanding".⁷² However, notwithstanding the Tariff Board's conclusion on the Cement Association, the history of the cement industry in the 1920's gives no reason to doubt the general truth of Adam Smith's dictum about meetings of business men:⁷³

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.

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68. A. E. Buttenshaw, Minister for Public Works, *N.S.W. Parliamentary Debates*, *op. cit.*, p. 6075.

69. *Sydney Morning Herald*, 22 Aug. 1930.

70. *Tariff Board Report on Portland Cement*, 22 March 1936, p. 6.

71. *Ibid. passim.*

72. *Ibid.* Transcript of Evidence, p. 57. Evidence of J. Symonds, General Manager of Commonwealth Portland Cement Co. Ltd.

73. *The Wealth of Nations*, ed. E. Cannan (2 Vols., Methuen, London, 1925), Vol. 1, p. 130.

THE PATTERN OF AUSTRALIAN DEMAND

1. *Data and Method*

The measurement of the relationship between consumers' demand for various commodity groups and their income, or total expenditure, is a comparatively easy matter if satisfactory family budget data are given. Furthermore, the results derived from such studies may, with certain qualifications, be used in connection with time series to obtain demand functions in their general form, i.e. consumption as a function of income, own price, other prices and other factors. It is a different matter when time series alone are available; the problem then arises how to extract information from the data without overloading them by asking for too much and in consequence getting unreliable results. Such is the position with regard to Australia.

In the present study, an attempt is made to construct Australian demand functions for four commodity groups among which all consumption expenditure is divided. The groups are those used in the officially published retail price indices, viz. Food, Housing, Clothing, and Miscellaneous. The present analysis is somewhat in the nature of a pilot study, and it is hoped to break consumers' expenditure down further when adequate expenditure and price data have been obtained.

One of the difficulties arising in a study of this kind consists in finding the best series to indicate income. To simplify matters, total consumption expenditure, which is the sum of the outlays on the four commodity groups, has been chosen in the first instance. Later on, the relationship between income and total outlay, and the possibility of introducing income into the demand functions, will be considered.

The postulated demand functions represent relationships between expenditure per head on food, housing, clothing and miscellaneous items respectively on one hand, and total expenditure per head, the prices of the four groups, and time on the other hand. The influence of time represents shifts in demand, or changes which cannot be satisfactorily explained by movements in income and prices; such changes may be very important and may account for a considerable part of the total variations in demand.

The main basic data are those given in Table IV (p. 19) of *National Income and Expenditure 1956-57*, viz. items 23b, 23a, 23c, and all other components of item 23 together respectively. The data refer to the nine financial years from 1948-49 to 1956-57. Figures for the mean population of financial years, given in the Demography Bulletins, have been used to reduce the totals to averages per head. The group indices of the "C" Series Retail Price Index for the capital cities, in the form given in the "Monthly Review of Business Statistics"—reduced to base period 1936-39 = 1000—have been used to indicate prices. For 1955-56 and 1956-57, two alternative indices for food have

been published, and both have been used alternatively in the present analysis. The index including potatoes and onions was then found to give a better fit, though the difference is not large; all the results given here are based on this variant of the index.

Nine years, of course, represent rather few observations on which to base a demand analysis. This is to some extent counterbalanced by the fact that real expenditure per head did not increase steadily over the period but was subject to quite large fluctuations. This feature, which is associated with the dependence of the Australian economy on wool prices, may be economically undesirable but presents advantages to the econometrician.

Even so, it is clear that some restrictive assumptions have to be made. In the first place, it would be quite unrealistic to expect that, with the available material, the best mathematical form of the relationship could be determined. A simple and convenient assumption is that of linearity. The demand functions can then be written in the form

$$v_i = \bar{v}_i + b_i (m - \bar{m}) + \sum_{j=1}^4 c_{ji} \left(\frac{p_j}{\bar{p}_j} - 1 \right) + d_i t \quad (i = 1, 2, 3, 4)$$

where v_i represents expenditure per head on a commodity group (1: food, 2: housing, 3: clothing, 4: miscellaneous); m total expenditure per head; p_i the price index for the group; \bar{v}_i , \bar{m} , \bar{p}_i means over the period; t time (with mean 0); b_i , c_{ji} , d_i constants.

This would mean four linear regression equations, each with the same six independent variables. The only restrictions on the regression coefficients, which are automatically satisfied when least-square methods

are used, would be that, since $\sum_{i=1}^4 v_i = m$,

$$\sum_{i=1}^4 b_i = 1; \quad \sum_{i=1}^4 c_{ji} = 0 \quad (j = 1, 2, 3, 4); \quad \sum_{i=1}^4 d_i = 0.$$

An attempt to derive, by multiple regression analysis, six partial regression coefficients for each equation from these few observations could not be justified. Additional assumptions should therefore be made. Before doing this, it is worth while looking at the meaning of the constants.

Write $w_i = \frac{v_i}{m}$ so that w_i represents the proportion of total outlay

devoted to each commodity group $\left(\sum_{i=1}^4 w_i = 1 \right)$, and $\bar{w}_i = \frac{\bar{v}_i}{\bar{m}}$. It is then

easily seen that $\frac{b_i}{\bar{w}_i}$ represents the income-elasticity of demand for, or of expenditure on, commodity group i at average level, i.e. at average income and average prices and with $t = 0$. Similarly, $\frac{c_{ii}}{\bar{w}_i}$ represents,

at average level, the direct price-elasticity of expenditure, $\frac{c_{ii}}{v_i} - 1$ the direct-price-elasticity of demand for commodity group i . $\frac{c_{ji}}{v_i}$ represents the cross price-elasticity of demand or expenditure for commodity group i with regard to a price change for group j . Indicating elasticities of demand by $\frac{Ex_i}{Em}$ and $\frac{Ex_i}{Ep_j}$ and their values at average level by $\overline{\frac{Ex_i}{Em}}$ and $\overline{\frac{Ex_i}{Ep_j}}$, we have

$$\overline{\frac{Ex_i}{Em}} = \frac{b_i}{w_i}, \quad \overline{\frac{Ex_i}{Ep_i}} = \frac{c_{ii}}{v_i} - 1, \quad \overline{\frac{Ex_i}{Ep_j}} = \frac{c_{ji}}{v_i} \quad (j \neq i)$$

The elasticities of substitution σ_{ji} are defined by the relation

$$\frac{Ex_i}{Ep_j} = -w_j \frac{Ex_i}{Em} + w_j \sigma_{ji}$$

or $\sigma_{ji} = \frac{1}{w_j} \frac{Ex_i}{Ep_j} + \frac{Ex_i}{Em}$

Again denote by $\overline{\sigma_{ji}}$ the value obtained at average level. Then

$$\overline{\sigma_{ii}} = \frac{1}{w_i} \left(\frac{c_{ii}}{v_i} + b_i - 1 \right), \quad \overline{\sigma_{ji}} = \frac{1}{w_i} \left(\frac{c_{ji}}{v_j} + b_i \right) \quad (j \neq i)$$

$$\text{or } \overline{c_{ii}} = \overline{v_i} (\overline{w_i} \overline{\sigma_{ii}} - b_i + 1), \quad \overline{c_{ji}} = \overline{v_j} (\overline{w_i} \overline{\sigma_{ji}} - b_i) \quad (j \neq i)$$

The demand functions can thus be written in the form

$$v_i - \overline{v_i} \pi_i - \overline{w_i} \sum_{j=1}^4 \overline{v_j} \overline{\sigma_{ji}} (\pi_j - 1) = b_i m^1 + d_i t$$

$$\text{where } \pi_i = \frac{p_i}{\overline{p_i}}, \quad m^1 = m - \sum_{i=1}^4 \overline{v_i} \pi_i \quad (\overline{m^1} = 0)$$

In this equation, π_i represents the price relative to its average over the period (not multiplied by 100 or 1,000 as in index numbers). m^1 is an indicator of real total outlay; it is the difference between actual total outlay and the amount necessary to purchase average quantities at current prices.

According to the theory of consumers' demand, $\sigma_{ij} = \sigma_{ji}$ and $\sum_{j=1}^4 w_j \sigma_{ij} = 0$. But this is not sufficient for the present purpose; a

simple assumption is needed which will reduce the regression equation to one containing two independent variables only. A simple possibility would consist in taking, at average level, all cross elasticities of substitution as equal, that is to say

$$\overline{\sigma_{ij}} = \sigma \quad (i = 1, 2, 3, 4; \quad j \neq i)$$

It follows then that

$$\overline{\sigma_{ii}} = - \frac{(1 - \overline{w_i}) \sigma}{\overline{w_i}}$$

In particular, we might make one of the following assumptions:

Either $\sigma = 0$, and $\bar{\sigma}_{ii} = 0$

$$\text{or } \sigma = 1, \text{ and } \sigma_{ii} = - \frac{(1 - \bar{w}_i)}{\bar{w}_i}$$

$$\text{or } \sigma = \frac{1}{2}, \text{ and } \bar{\sigma}_{ii} = - \frac{(1 - \bar{w}_i)}{2\bar{w}_i}$$

The meaning of the assumption $\sigma = 0$ is as follows: There is no substitution between commodity groups, and a price change influences the expenditure pattern only through the income effects, the magnitude of which is proportionate to the importance of the group experiencing the price change and to the income-elasticity of the group with the effect of which one is concerned. If a commodity group rises in price, more is spent on it, and outlay on all groups is reduced proportionately to their income-elasticities; if the price rise is compensated by higher income and total outlay, the monetary expenditure pattern changes but the quantities are not affected. All this applies exactly at average level only, but approximately at other levels as well.

The assumption $\sigma = 1$, on the other hand, implies that, apart from the income effect, the money pattern of expenditure is not affected by price changes. If the income effect of a price rise is compensated by a corresponding rise in total outlay, the consumption of the commodity group rising in price is reduced in real terms, and the consumption of other groups increases, so as to leave the distribution of outlay constant. The reduction may be brought about partly by smaller quantities of all commodities in the group being bought, partly by substitution of lower-priced for higher-priced items; and similarly for an increase in consumption. This hypothesis, if satisfied, would be statistically very convenient, for it would mean that prices enter into the demand function in an aggregate only and not individually, which would simplify the equation. It will, however, be shown that the assumption cannot be considered as realistic.

The assumption $\sigma = \frac{1}{2}$ is simply a compromise between the two extremes. Each of these three assumptions was tested by solving the regression equations with the least-square method on its basis. On the whole, the model with $\sigma = \frac{1}{2}$ was found to be most satisfactory, in the sense that it leaves least of the variation in expenditure per head on the commodity groups unexplained. The exception is rent, for which the model with $\sigma = 0$ gives a considerably better fit.

It was then finally decided to use a mixed model in which

$$\sigma_{ij} = \begin{cases} 0 & \text{for } i = 2, j \neq 2 \text{ or } i \neq 2, j = 2 \\ \frac{1}{2} & \text{for } i \neq 2, j \neq 2, j \neq i \end{cases}$$

and thus $\sigma_{22} = 0$

$$\sigma_{ii} = - \frac{(1 - \bar{w}_2 - \bar{w}_i)}{2\bar{w}_i} \quad (i \neq 2)$$

There is a sound theoretical justification for the hypothesis. Expenditure on housing, particularly with regard to owner-occupied

houses, is planned on a long-term basis and cannot be quickly adjusted in response to short-term price movements; hence no appreciable substitution between housing and other commodity groups is likely in the short run. This, however, implies that the change in housing expenditure in response to income changes, or the income-elasticity of demand for housing, obtained here refers to short-term effects only. Long-term effects of relative prices are included in the trend, i.e. the effect of time, and cannot be isolated from other changes over time.

Having fixed upon the model, it is a simple matter to derive the constants b_i and d_i by multiple regression analysis. Since m^1 and t are not highly correlated, the effects of income and time can be isolated with some confidence. In the case of each commodity group, the introduction of time is found to improve the fit considerably over that which is a simple regression on m^1 would give.

From the results, the effects of price changes, or the price-elasticities of demand, may also be calculated. It must, however, be borne in mind that neither direct nor cross price-elasticities are estimated independently of the income-elasticities, and the results obtained for them are very much influenced by the underlying assumptions made for the elasticities of substitution. On the other hand, the income-elasticities of demand are, on the whole, little affected by these assumptions. This is so because they are, broadly speaking, obtained from changes in real income per head, which are relatively large, whilst the price-elasticities would be estimated from differentials in price movements, which are comparatively small.

2. Results Based on Total Expenditure

The resulting demand functions can be written as follows:

$$v_1 = 75.91 + .1953 (m - 288.3) + 36.01 \left(\frac{p_1}{2,654} - 1 \right) \\ - 4.28 \left(\frac{p_2}{1,210} - 1 \right) - 2.62 \left(\frac{p_3}{3,482} - 1 \right) \\ - 9.50 \left(\frac{p_4}{1,929} - 1 \right) - .74t$$

$$v_2 = 21.93 + .0106 (m - 288.3) - .81 \left(\frac{p_1}{2,654} - 1 \right) \\ + 21.69 \left(\frac{p_2}{1,210} - 1 \right) - .44 \left(\frac{p_3}{3,482} - 1 \right) \\ - 1.59 \left(\frac{p_4}{1,929} - 1 \right) + 1.04t$$

$$v_3 = 41.12 + .1959 (m - 288.3) - 9.45 \left(\frac{p_1}{2,654} - 1 \right) \\ - 4.29 \left(\frac{p_2}{1,210} - 1 \right) + 17.01 \left(\frac{p_3}{3,482} - 1 \right) \\ - 18.60 \left(\frac{p_4}{1,929} - 1 \right) - 1.17t$$

$$v_4 = 149.36 + .5982 (m - 288.3) - 25.75 \left(\frac{p_1}{2,654} - 1 \right)$$

$$- 13 \cdot 12 \left(\frac{p_2}{1,210} - 1 \right) - 13 \cdot 95 \left(\frac{p_3}{3,482} - 1 \right) \\ + 29 \cdot 69 \left(\frac{p_4}{1,929} - 1 \right) + \cdot 87t$$

Herein $p_i = 1,000$ for 1936-39 ($i = 1, 2, 3, 4$)

$t = 0$ for 1952/53 and measured in years, thus ranging from
- 4 to + 4 over the period studied.

v_i and m measured in £.

The equations can also be written in another form :

$$v_1 = \cdot 1953m + 13 \cdot 56 \frac{p_1}{1,000} - 3 \cdot 54 \frac{p_2}{1,000} - \cdot 75 \frac{p_3}{1,000} \\ - 4 \cdot 93 \frac{p_4}{1,000} - \cdot 74t$$

$$v_2 = \cdot 0106m - \cdot 30 \frac{p_1}{1,000} + 17 \cdot 93 \frac{p_2}{1,000} - \cdot 13 \frac{p_3}{1,000} \\ - \cdot 82 \frac{p_4}{1,000} + 1 \cdot 04t$$

$$v_3 = \cdot 1959m - 3 \cdot 56 \frac{p_1}{1,000} - 3 \cdot 55 \frac{p_2}{1,000} + 4 \cdot 89 \frac{p_3}{1,000} \\ - 9 \cdot 65 \frac{p_4}{1,000} - 1 \cdot 17t$$

$$v_4 = \cdot 5982m - 9 \cdot 70 \frac{p_1}{1,000} - 10 \cdot 84 \frac{p_2}{1,000} - 4 \cdot 01 \frac{p_3}{1,000} \\ + 15 \cdot 40 \frac{p_4}{1,000} + \cdot 87t.$$

The fact that the constant terms in these equations are all nil, or strictly speaking negligible, is accidental. We also have $\bar{w}_1 = \cdot 2633$, $\bar{w}_2 = \cdot 0760$, $\bar{w}_3 = \cdot 1426$, $\bar{w}_4 = \cdot 5181$.

These results are interpreted as follows: On the average over the period 1948-57, expenditure per head was £288.6s., of which £75.18s., or 26.3 per cent, went on food; £21.19s., or 7.6 per cent, on housing; £41.2s., or 14.3 per cent, on clothing; £149.7s., or 51.8 per cent, on miscellaneous items. At the margin of total outlay, expenditure was distributed as follows: 19.5 per cent on food, 1.1 per cent on housing, 19.6 per cent on clothing, 59.8 per cent on miscellaneous items. As stated above, the figure for housing represents short-term effects only. An increase in price of any group brought about a higher outlay on that group and a lower outlay on all others. For example, an increase in food prices by 265 points, which is 10 per cent of the average price index level, implies that £3.12s. more is spent on food, 2s. less on housing, 19s. less on clothing and £2.11s. less on miscellaneous items. Furthermore, apart from price and income changes, food expenditure tended to decrease by 15s., housing expenditure to increase by £1.1s., clothing expenditure to decrease by £1.3s.6d. and miscellaneous expenditure to increase by 17s.6d. each year.

At average income and price level, the following values are obtained for the income-elasticities of demand:

$$\frac{\overline{Ex_1}}{\overline{Em}} = .74; \frac{\overline{Ex_2}}{\overline{Em}} = .14; \frac{\overline{Ex_3}}{\overline{Em}} = 1.37; \frac{\overline{Ex_4}}{\overline{Em}} = 1.15.$$

Clothing thus appears to have the highest income-elasticity of demand, but the demand for miscellaneous items is also elastic, that for food is inelastic and that for rent very inelastic, apart from long-term effects included in the trend. This is the sort of result one might have expected to find; and indeed, the analysis may merely have—as economics and economic statistics is often alleged to do—“started from false premises and reached foregone conclusions”!

For the average price-elasticities $\frac{\overline{Ex_i}}{\overline{Ep_j}}$ the following values are obtained:

| <i>i</i> | <i>j</i> = 1 | 2 | 3 | 4 |
|----------|--------------|------|------|------|
| 1 | -.53 | -.06 | -.03 | -.12 |
| 2 | -.04 | -.01 | -.02 | -.07 |
| 3 | -.23 | -.10 | -.59 | -.45 |
| 4 | -.17 | -.09 | -.09 | -.80 |

As pointed out before, too much weight should not be given to these latter results, but if they are correct, the demand for each commodity group is inelastic with regard to changes in its price, and that for housing particularly so. Any price rise in one group causes outlay on each of the other groups to fall.

In order to assess the reliability of the results obtained here, the unexplained portion of the variation in consumption per head for each commodity group may be considered, first as a percentage of the variation in the dependent variable in the regression—the proportion is then $1 - R^2$, where R is the multiple correlation coefficient—and secondly as a percentage of the variation in the original variable v_i which still contains the effect of price changes. The results indicate a very good fit and are as follows:

| | <i>Food</i> | <i>Housing</i> | <i>Clothing</i> | <i>Miscellaneous</i> |
|---|-------------|----------------|-----------------|----------------------|
| Unexplained variance in % of variance in: | | | | |
| transformed variable | 9.29 | .98 | 2.74 | 1.30 |
| original variable | .22 | .27 | .82 | .09 |

Furthermore, it is of interest to consider the effect of alternative assumptions upon the results. It goes without saying that the results obtained for price-elasticities depend very much upon the assumptions made for substitution elasticities; but this does not necessarily apply to the results for income-elasticities and trends. In the four models studied here, the range within which the results—in each case derived by multiple regression on the income variable and time—vary is as follows:

| | <i>Food</i> | <i>Housing</i> | <i>Clothing</i> | <i>Miscellaneous</i> |
|---|--------------------------------|-------------------------------|--------------------------------|--------------------------------|
| Income elasticity of demand at average level | .57 to .74 | .14 to 1.36 | 1.27 to 1.38 | 1.09 to 1.15 |
| Annual change in expenditure per head, other things equal | - £1.10s.6d. to + 8s.6d. | + 4s.0d. to + £1.1s.0d. | - £1.6s.6d. to - 18s.6d. | + 14s.0d. to + £1.8s.0d. |

The resulting income-elasticities of demand for food, clothing and miscellaneous items are seen to vary very little. Only for housing, the income-elasticity would be sensibly affected by the assumption; but using alternative models, the fit would become much worse, since the model $\sigma_{ij} = \frac{1}{2}$ would leave 2.21 per cent, and the model $\sigma_{ij} = 1$ even 6.47 per cent of the total variation unexplained instead of .27 per cent. The model based on $\sigma_{ij} = 0$ would also be inferior with regard to the fit, particularly in the clothing group, where 2.37 per cent instead of .82 per cent of the variance would be unexplained. This justifies the retention of the chosen model and the placing of a fair degree of reliance upon the numerical results regarding the income effects. The results for the trend are not quite so stable, in particular the trend for food seems somewhat uncertain; but the trend for housing and miscellaneous items is always positive, that for clothing always negative, no matter which assumption is made.

An arbitrary assumption made with regard to the income-elasticities, combined with the derivation by least squares of the linear trend, would also imply a considerably poorer fit. For example, if in addition to the assumption $\sigma_{ij} = \left\{ \begin{matrix} 0 \\ \frac{1}{2} \end{matrix} \right\}$ the assumption $\frac{\bar{E}x_i}{Em} = 1$ ($i = 1, 2, 3, 4$) is introduced, the unexplained portion of the variation for housing is made almost nine times larger. The assumption $\frac{\bar{E}x_i}{Em} = \begin{pmatrix} 0 & i = 2 \\ 1 & i \neq 2 \end{pmatrix}$ would not greatly affect the fit for housing and miscellaneous items, but the unexplained variation would be nearly doubled for clothing and nearly trebled for food. This feature offers further support for the thesis that the demand functions obtained here are fundamentally reliable.

3. Relations between Income and Expenditure

It is easy to transform the equations derived for expenditure per head into equations for expenditure by all consumers. If V_i represents consumption expenditure on each commodity group, M total consumption expenditure (all measured in £ million) and P population (in millions), we have:

$$\begin{aligned}
 V_1 &= .1953M + P \left(13.56 \frac{p_1}{1,000} - 3.54 \frac{p_2}{1,000} - .75 \frac{p_3}{1,000} \right. \\
 &\quad \left. - 4.93 \frac{p_4}{1,000} - .74t \right) \\
 V_2 &= .0106M + P \left(-.30 \frac{p_1}{1,000} + 17.93 \frac{p_2}{1,000} - .13 \frac{p_3}{1,000} \right. \\
 &\quad \left. - .82 \frac{p_4}{1,000} + 1.04t \right) \\
 V_3 &= .1959M + P \left(-3.56 \frac{p_1}{1,000} - 3.55 \frac{p_2}{1,000} + 4.89 \frac{p_3}{1,000} \right. \\
 &\quad \left. - 9.65 \frac{p_4}{1,000} - 1.17t \right)
 \end{aligned}$$

$$V_4 = .5982M + P \left(-9.70 \frac{p_1}{1,000} - 10.84 \frac{p_2}{1,000} - 4.01 \frac{p_3}{1,000} + 15.40 \frac{p_4}{1,000} + .87t \right)$$

The question now arises: Can M itself be predicted on the basis of some indicator for income? H. W. Arndt and B. Cameron suggest that it can be done on the basis of non-farm disposable income.* This hypothesis should now be examined.

Total consumption expenditure may be considered as a linear function of total disposable income, or of non-farm and of farm disposable income. The validity of this model may be queried on theoretical grounds, for it implicitly assumes that prices and population size do not affect the decision by the nation how much to save and how much to spend altogether. It is, however, a convenient model. There is also a practical objection against using such an equation for estimating the respective influence of non-farm and farm income; for the result will be heavily influenced by the long-term increase in money income over the period, which largely reflects population growth and price rises.

The second, though not the first, objection is met by estimating the regression coefficients from the equation

$$\frac{M}{I} = a + b \frac{N}{I} + \frac{c}{I}$$

where I denotes total, N non-farm disposable income. If F stands for farm disposable income so that $N + F = I$, the equation can be written as

$$M = aI + bN + c = (a + b)N + aF + c$$

Data for I can be obtained from Table IV (p. 19) of *National Income and Expenditure 1956-57* by deducting item 13b—income taxes—from total income or outlay. Strictly speaking, estate and gift duties should also be deducted, but this is a minor item. Data for N represent revised estimates of the figures given in Table I (p. 110) of "An Australian Consumption Function".

Applying the method of least squares to the equation in its first form, the finding is that

$$\frac{M}{I} = .99768 \frac{N}{I} + \frac{148.8}{I} - .07178$$

About 95 per cent of the variation in $\frac{M}{I}$ is explained by the regression. This means that it is certainly better to use non-farm and farm income separately than combined, in order to explain variations in consumption expenditure.

Rewritten, the equation would become

$$M = 148.8 + .9259 N - .0718 F$$

* H. W. Arndt and B. Cameron, "An Australian Consumption Function", *Economic Record*, Vol. 33, No. 64, April 1957.

This would seem to imply that other things being equal, consumption expenditure falls slightly when farm disposable income rises. Since this is not plausible and in any case the effect of variations in farm disposable income is small, it seems justifiable to replace the last term by a constant, obtained by substituting the average value of F over the period amounting to 399. The consumption function then assumes the form

$$M = 120.2 + .9259 N$$

This expression may be substituted for M in the equations relating V_4 to M , P , p_1 , p_2 , p_3 , p_4 and t .

It is of interest to see how closely the calculated values for V_1 , V_2 , V_3 and V_4 approximate the actual values. The calculation can be made on the basis of (a) actual total consumption expenditure, or (b) non-farm disposable income. In either case the price indices as given in the *Monthly Review of Business Statistics* are used, and t assumes successively the values -4 , -3 , \dots , $+4$. The results are as follows:

| Year | Expenditure on: | | | | |
|-----------------|-----------------|---------|----------|---------------|------------|
| | Food | Housing | Clothing | Miscellaneous | All Groups |
| 1948/49: Actual | 381 | 121 | 239 | 731 | 1,472 |
| Calculated (a) | 378 | 116 | 238 | 740 | 1,472 |
| (b) | 375 | 116 | 235 | 731 | 1,457 |
| 1949/50: Actual | 430 | 129 | 265 | 848 | 1,672 |
| Calculated (a) | 423 | 129 | 269 | 851 | 1,672 |
| (b) | 423 | 130 | 270 | 853 | 1,676 |
| 1950/51: Actual | 512 | 142 | 330 | 1,047 | 2,031 |
| Calculated (a) | 518 | 145 | 322 | 1,046 | 2,031 |
| (b) | 516 | 145 | 319 | 1,038 | 2,018 |
| 1951/52: Actual | 635 | 158 | 353 | 1,245 | 2,391 |
| Calculated (a) | 649 | 161 | 358 | 1,223 | 2,391 |
| (b) | 652 | 161 | 361 | 1,233 | 2,407 |
| 1952/53: Actual | 698 | 186 | 356 | 1,298 | 2,538 |
| Calculated (a) | 691 | 187 | 355 | 1,305 | 2,538 |
| (b) | 699 | 187 | 363 | 1,329 | 2,578 |
| 1953/54: Actual | 747 | 211 | 389 | 1,455 | 2,802 |
| Calculated (a) | 752 | 211 | 388 | 1,451 | 2,802 |
| (b) | 754 | 211 | 390 | 1,458 | 2,813 |
| 1954/55: Actual | 812 | 236 | 423 | 1,625 | 3,096 |
| Calculated (a) | 808 | 236 | 429 | 1,623 | 3,096 |
| (b) | 805 | 236 | 427 | 1,615 | 3,088 |
| 1955/56: Actual | 883 | 264 | 441 | 1,739 | 3,327 |
| Calculated (a) | 878 | 263 | 442 | 1,744 | 3,327 |
| (b) | 878 | 263 | 442 | 1,745 | 3,328 |
| 1956/57: Actual | 923 | 294 | 448 | 1,864 | 3,529 |
| Calculated (a) | 925 | 292 | 443 | 1,869 | 3,529 |
| (b) | 918 | 292 | 435 | 1,847 | 3,492 |

The fit seems satisfactory, though of course it cannot be as good when based on non-farm disposable income as when total consumption expenditure is used. The demand functions thus seem to give a good, if broad, description of what has happened to consumption in Australia since the immediate post-war years.

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CAPITAL, INCOME AND OUTPUT IN NEW ZEALAND AGRICULTURE 1922-1956*

1. *Introduction*

Since agriculture is such an important sector of the New Zealand economy, it is surely surprising that there exist no official or unofficial estimates of net farm incomes for the interwar period, nor of net productivity in agriculture for any period at all. This article is an attempt to fill this gap in our statistics by presenting some estimates of capital, net income, and net output in farming, which were derived by the authors as the by-product of a larger study of time-series production functions and supply functions for New Zealand agriculture. In deriving these estimates, considerable care has been taken to check the results by using as many different methods as possible. While, we consider, therefore, that they are the best estimates that can at present be secured from the available raw data, we are only too well aware of their imperfections and it is to be hoped that they will form the basis for informed criticism leading eventually to more detailed research and improved results.

Full details of the calculations and of the estimating procedures adopted are being published as a separate monograph available from the authors on request. In this article we give only the final estimates of capital, income, and output together with a very broad indication of the methods used. Throughout the tables which follow, all data given in real terms have been expressed in 1949/50 prices. The year 1949/50 was chosen as base year because in New Zealand it was a post-war year of reasonable internal and external stability, it was free from complications such as the 1948 appreciation of the New Zealand exchange rate and the 1950/51 wool boom, and lastly it was the year in which occurred the latest census of agriculture.

2. *Real Capital Employed in New Zealand Agriculture*

Table I gives the final estimates of real capital divided into livestock, plant and machinery, and improvements to land. Little difficulty was experienced in deriving the value of livestock but some comments are necessary here on the methods used for estimating plant and machinery and improvements.

(a) *Plant and Machinery*

The method used was to commence with the depreciated value, in 1949/50 prices, of the plant and machinery on farms as reported in

* The Senior Author of this article is Statistician of the New Zealand Meat and Wool Boards' Economic Service, but the views expressed are personal. Grateful acknowledgement must be made however for the advice and encouragement received from colleagues in the Economic Service.

the 1949/50 Census of Agriculture. This base year figure was then extended backwards and forwards using a series of real net investment in plant and machinery. This in turn was derived, after allowing for depreciation, from a gross investment series built up from the official statistics of local production and imports of farm plant and machinery deflated by a specially constructed index of farm machinery prices.

TABLE I
Value of Total Real Capital on New Zealand Farms

| Year | (1) Livestock | (2) Plant Machinery | (3) Improvements | (4) Total |
|---------|------------------|---------------------------|---------------------|--------------|
| | | £ 000 (1949/50 Prices) | | |
| 1920/21 | 107,938 | 12,539 | 178,950 | 299,427 |
| 1921/22 | 109,214 | 14,680 | 177,341 | 301,235 |
| 1922/23 | 108,969 | 15,716 | 178,940 | 303,625 |
| 1923/24 | 112,399 | 17,639 | 180,009 | 310,047 |
| 1924/25 | 113,315 | 20,107 | 184,219 | 317,641 |
| 1925/26 | 114,575 | 22,312 | 200,799 | 337,686 |
| 1926/27 | 112,688 | 23,918 | 213,223 | 349,829 |
| 1927/28 | 114,990 | 24,378 | 234,017 | 373,385 |
| 1928/29 | 121,191 | 25,065 | 239,369 | 385,625 |
| 1929/30 | 130,644 | 26,925 | 250,026 | 407,595 |
| 1930/31 | 139,162 | 27,775 | 259,242 | 426,179 |
| 1931/32 | 136,529 | 27,127 | 270,737 | 434,393 |
| 1932/33 | 135,807 | 27,017 | 278,910 | 441,734 |
| 1933/34 | 135,310 | 27,448 | 287,514 | 450,272 |
| 1934/35 | 137,736 | 27,732 | 298,590 | 464,058 |
| 1935/36 | 138,351 | 29,040 | 304,651 | 472,042 |
| 1936/37 | 142,950 | 31,557 | 304,867 | 479,374 |
| 1937/38 | 147,547 | 33,694 | 300,959 | 482,240 |
| 1938/39 | 150,894 | 35,313 | 295,435 | 481,642 |
| 1939/40 | 149,288 | 35,581 | 294,780 | 479,649 |
| 1940/41 | 148,026 | 36,028 | 294,087 | 478,141 |
| 1941/42 | 150,493 | 35,924 | 293,038 | 478,455 |
| 1942/43 | 149,113 | 34,304 | 291,070 | 474,487 |
| 1943/44 | 150,102 | 35,004 | 290,052 | 475,158 |
| 1944/45 | 153,646 | 37,672 | 289,818 | 481,136 |
| 1945/46 | 156,587 | 39,541 | 291,110 | 487,238 |
| 1946/47 | 154,466 | 42,975 | 294,490 | 491,931 |
| 1947/48 | 154,092 | 45,512 | 299,740 | 499,344 |
| 1948/49 | 153,684 | 49,842 | 306,343 | 509,869 |
| 1949/50 | 158,010 | 51,881 | 314,567 | 524,458 |
| 1950/51 | 162,234 | 54,678 | 322,641 | 539,553 |
| 1951/52 | 166,132 | 57,914 | 329,146 | 553,192 |
| 1952/53 | 171,783 | 60,774 | 357,344 | 589,901 |
| 1953/54 | 178,602 | 61,682 | 379,354 | 619,638 |
| 1954/55 | 185,373 | 64,034 | 418,553 | 667,960 |

(b) *Improvements to Land*

This series is derived from the published statistics of the value of improvements in the Government valuations of rural counties. These have been deflated by a specially constructed index of the cost of improvements thus giving the value of improvements at depreciated 1949/50 replacement cost.

The rationale underlying this procedure is that it is general practice for improvements to be valued at depreciated replacement cost, but it must at once be conceded that our method suffers from the following imperfections.¹

First, in periods of rapid change in the prices of primary products, when open market land values were rising or falling in sympathy, it is likely that the full effect was reflected by Government valuers not as it should have been in changes in unimproved value only, but also in changes in the value of improvements. For this reason it is likely that the published value of improvements is too low in the 1930 period and too high for the years since 1951. It is not possible however to measure the magnitude of this effect.

A second difficulty is that the annual valuation figures as published are not the result of an *annual* revaluation of every county. It is more likely that at the least each county has been revalued only about once every five years. The annual figures can therefore only be relied upon to give an accurate estimate of changes in the value of improvements for all rural counties, in periods when the rate of investment in improvements in all counties is proceeding at the same rate as in the counties which are in fact being revalued. This means that the series gives a somewhat distorted picture in periods when investment in improvements was not proceeding uniformly throughout the country or when investment in improvements was in general slowing down or speeding up. For these reasons it would be unwise to rely too much on the figures as an indicator of annual investment in improvements, even though they are quite suitable as an indicator of the general trends in the capital employed in the form of improvements.

3. *Factor Incomes in Farming and Net Farm Output*

Our conceptual approach in calculating farm income and productivity is that of national income accounting. In this approach farming is regarded as a separate industry employing and paying factors of production, and also purchasing goods and services from other industries, which purchases form some part of the gross output of those other industries. In order to arrive then at the net contribution made by agriculture to the national income, a deduction from gross output must be made for these purchases both when dealing in terms of current prices and constant prices. The residual, found after making such a deduction, equals the total rewards paid to the factors of production whether owned or hired by the farmer. In constant prices it represents the true net productivity of agriculture.

Tables II and III give our completed estimates of income and expenses in current prices and in 1949/50 prices. We begin by defining the terms used in these tables.

1. An excellent appraisal of this whole question of using official valuation figures to derive estimates of investment in improvements, is to be found in G. O. Gutman: "Investment and Production in Australian Agriculture", *Review of Marketing and Agricultural Economics*, Vol. 23, No. 4, pp. 253-273.

TABLE II
Gross Income, Expenditure and Net Income on New Zealand Farms 1921-1956
 £,000—Current Prices
 Year ended 30th June

| ITEM | 1921/22 | 1922/23 | 1923/24 | 1924/25 | 1925/26 | 1926/27 | 1927/28 | 1928/29 | 1929/30 | 1930/31 | 1931/32 | 1932/33 |
|--------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. Non Factor Expenses | | | | | | | | | | | | |
| 2. Farm Requisites | 1,281 | 1,139 | 1,390 | 1,410 | 1,579 | 1,410 | 1,365 | 1,421 | 1,444 | 1,359 | 1,083 | 1,092 |
| 3. Fertiliser | 354 | 463 | 641 | 879 | 1,272 | 1,284 | 1,465 | 1,731 | 1,921 | 1,550 | 1,347 | 1,491 |
| 4. Lime | 142 | 152 | 220 | 241 | 226 | 231 | 240 | 239 | 248 | 240 | 196 | 198 |
| 5. Seeds (imported) | 204 | 128 | 239 | 280 | 209 | 264 | 163 | 212 | 224 | 164 | 88 | 117 |
| 6. Fuel, Oil and Grease | 105 | 91 | 101 | 180 | 296 | 340 | 398 | 352 | 415 | 492 | 493 | 558 |
| 7. Electricity and Power | 434 | 435 | 452 | 463 | 485 | 502 | 541 | 493 | 616 | 692 | 708 | 741 |
| 8. Repairs and Maintenance: | | | | | | | | | | | | |
| (i) Buildings, Fences and Structures | 1,910 | 1,640 | 1,549 | 1,650 | 1,748 | 1,828 | 2,004 | 2,058 | 2,143 | 2,219 | 2,165 | 2,094 |
| (ii) Plant and Machinery | 1,638 | 663 | 718 | 845 | 975 | 1,073 | 1,139 | 1,164 | 1,240 | 1,285 | 1,243 | 1,196 |
| 9. Railage and Cartage | 1,426 | 1,242 | 1,111 | 1,127 | 1,089 | 1,117 | 1,262 | 1,233 | 1,297 | 1,314 | 1,296 | 1,509 |
| 10. Depreciation: | | | | | | | | | | | | |
| (i) Buildings and Structures | 902 | 912 | 918 | 943 | 1,049 | 1,111 | 1,111 | 1,230 | 1,320 | 1,372 | 1,434 | 1,479 |
| (ii) Plant and Machinery | 309 | 368 | 398 | 454 | 530 | 602 | 662 | 688 | 718 | 779 | 808 | 811 |
| 11. Other Expenses | 6,996 | 6,831 | 7,067 | 7,841 | 8,350 | 7,641 | 7,257 | 7,101 | 6,719 | 6,291 | 5,467 | 4,591 |
| 12. Total Non Factor Expenses | 14,701 | 14,064 | 14,804 | 16,313 | 17,808 | 17,403 | 17,726 | 17,952 | 18,305 | 17,757 | 16,328 | 15,877 |
| 13. Factor Expenses | | | | | | | | | | | | |
| 14. Wages | 7,980 | 7,733 | 8,160 | 8,130 | 7,493 | 8,086 | 8,927 | 10,098 | 10,406 | 10,556 | 8,860 | 6,089 |
| 15. Interest | 7,355 | 7,752 | 8,054 | 8,401 | 8,695 | 8,770 | 9,034 | 9,217 | 9,603 | 9,824 | 9,745 | 9,558 |
| 16. Rent | 2,841 | 2,795 | 2,823 | 2,767 | 2,744 | 2,734 | 2,689 | 2,681 | 2,688 | 2,399 | 2,393 | 2,203 |
| 17. Rates | 1,557 | 1,792 | 1,837 | 1,959 | 2,092 | 2,111 | 2,229 | 2,238 | 2,231 | 1,839 | 1,737 | 1,470 |
| 18. Land Tax | 1,638 | 1,541 | 1,426 | 1,335 | 1,267 | 1,229 | 1,154 | 1,140 | 1,507 | 1,146 | 1,542 | 1,499 |
| 19. Total Factor Expenses | 21,371 | 21,613 | 22,300 | 22,592 | 22,291 | 22,930 | 24,033 | 25,374 | 26,435 | 25,764 | 23,277 | 19,819 |
| 20. Total Expenses(a) | 36,100 | 35,700 | 37,100 | 38,900 | 40,100 | 40,300 | 41,800 | 43,300 | 44,700 | 43,500 | 39,600 | 35,700 |
| 21. Net Farm Income(a) | 13,400 | 17,500 | 16,300 | 26,500 | 14,900 | 13,900 | 20,700 | 25,300 | 16,500 | 0-0 | -1,700 | 2,300 |
| 22. Gross Farm Income(a) | 49,500 | 53,200 | 53,400 | 65,400 | 55,000 | 54,200 | 62,500 | 68,600 | 61,200 | 43,500 | 37,900 | 38,000 |

(a) Rounded to nearest hundred thousand.

(b) Provisional estimates.

TABLE II—continued

| ITEM | 1933/34 | 1934/35 | 1935/36 | 1936/37 | 1937/38 | 1938/39 | 1939/40 | 1940/41 | 1941/42 | 1942/43 | 1943/44 | 1944/45 |
|---------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. Non Factor Expenses | | | | | | | | | | | | |
| 2. Farm Requisites | 1,282 | 1,347 | 1,383 | 1,322 | 1,544 | 1,466 | 1,559 | 1,949 | 1,734 | 1,651 | 2,056 | 2,667 |
| 3. Fertiliser | 1,464 | 1,449 | 1,320 | 1,832 | 2,268 | 2,225 | 2,634 | 2,771 | 2,103 | 1,680 | 1,613 | 2,091 |
| 4. Lime | 204 | 231 | 269 | 321 | 370 | 378 | 377 | 512 | 566 | 668 | 724 | 727 |
| 5. Seeds (imported) | 109 | 138 | 134 | 127 | 173 | 130 | 160 | 109 | 109 | 89 | 127 | 185 |
| 6. Fuel, Oil and Grease | 646 | 651 | 718 | 828 | 990 | 1,084 | 1,296 | 1,689 | 1,503 | 2,079 | 2,217 | 2,384 |
| 7. Electricity and Power | 716 | 697 | 730 | 761 | 808 | 850 | 890 | 945 | 966 | 973 | 985 | 990 |
| 8. Repairs and Maintenance: | | | | | | | | | | | | |
| (i) Buildings, Fences and Structures | 2,263 | 2,346 | 2,425 | 2,595 | 2,937 | 3,074 | 3,055 | 3,375 | 3,652 | 3,749 | 3,900 | 3,926 |
| (ii) Plant and Machinery | 1,134 | 1,190 | 1,272 | 1,520 | 1,888 | 2,098 | 2,188 | 2,355 | 2,253 | 2,442 | 2,632 | 2,775 |
| (iii) Plant and Cartage | 1,580 | 1,492 | 1,582 | 1,670 | 1,718 | 1,657 | 1,812 | 2,147 | 1,968 | 2,107 | 2,098 | 2,288 |
| 9. Rallage and Cartage | | | | | | | | | | | | |
| 10. Depreciation: | | | | | | | | | | | | |
| (i) Buildings and Structures | 1,524 | 1,583 | 1,613 | 1,615 | 1,593 | 1,561 | 1,557 | 1,552 | 1,545 | 1,531 | 1,523 | 1,522 |
| (ii) Buildings and Machinery | 833 | 858 | 886 | 951 | 1,073 | 1,212 | 1,347 | 1,413 | 1,483 | 1,539 | 1,514 | 1,634 |
| (iii) Other Expenses | 4,202 | 3,877 | 4,396 | 5,416 | 6,612 | 7,376 | 9,561 | 12,226 | 14,401 | 18,140 | 21,710 | 24,297 |
| 11. Other Expenses | | | | | | | | | | | | |
| 12. Total Non Factor Expenses | 15,957 | 15,859 | 16,928 | 18,958 | 21,974 | 23,111 | 26,436 | 31,041 | 32,273 | 36,648 | 41,099 | 45,486 |
| 13. Factor Expenses | | | | | | | | | | | | |
| 14. Wages | 5,428 | 5,548 | 6,210 | 9,394 | 12,134 | 12,829 | 12,438 | 10,659 | 8,671 | 9,586 | 11,090 | 11,810 |
| 15. Interest | 7,412 | 7,416 | 7,396 | 7,421 | 7,373 | 7,253 | 7,254 | 7,142 | 7,045 | 6,794 | 6,540 | 6,446 |
| 16. Rent | 2,281 | 2,302 | 2,323 | 2,302 | 2,280 | 2,280 | 2,277 | 2,230 | 2,233 | 2,250 | 2,207 | 2,200 |
| 17. Rates | 1,701 | 1,595 | 1,664 | 1,898 | 2,159 | 2,269 | 2,356 | 2,416 | 2,415 | 2,495 | 2,504 | 2,513 |
| 18. Land Tax | 499 | 493 | 459 | 1,048 | 1,038 | 1,058 | 1,019 | 959 | 1,009 | 976 | 988 | 953 |
| 19. Total Factor Expenses | 17,321 | 17,354 | 18,052 | 22,063 | 24,994 | 25,689 | 25,344 | 23,406 | 21,373 | 22,071 | 23,329 | 23,922 |
| 20. Total Expenses(a) | 33,300 | 33,200 | 35,000 | 41,000 | 47,000 | 48,800 | 51,800 | 54,400 | 53,600 | 58,700 | 64,400 | 69,400 |
| 21. Net Farm Income(a) | 16,300 | 13,400 | 24,000 | 33,600 | 24,100 | 21,800 | 24,000 | 31,300 | 31,200 | 27,100 | 23,300 | 34,300 |
| 22. Gross Farm Income(a) | 49,600 | 46,600 | 59,000 | 74,600 | 71,100 | 70,600 | 75,800 | 85,700 | 84,800 | 85,800 | 87,700 | 103,700 |

TABLE II—continued

| ITEM | 1945/46 | 1946/47 | 1947/48 | 1948/49 | 1949/50 | 1950/51 | 1951/52 | 1952/53 | 1953/54 | 1954/55 | 1955/56 |
|--------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|
| 1. Non Factor Expenses | | | | | | | | | | | |
| 2. Farm Requisites | 1,745 | 1,867 | 3,622 | 3,102 | 3,244 | 2,860 | 6,142 | 4,221 | 3,035 | 3,602 | 4,000(b) |
| 3. Fertiliser | 2,291 | 2,883 | 4,937 | 6,037 | 5,989 | 7,181 | 9,490 | 8,999 | 8,252 | 10,356 | 11,261 |
| 4. Lime | 1,036 | 742 | 849 | 946 | 1,044 | 1,143 | 1,176 | 1,122 | 1,218 | 1,443 | 1,609(b) |
| 5. Seeds (imported) | 214 | 310 | 362 | 284 | 323 | 323 | 740 | 205 | 161 | 400 | 722 |
| 6. Fuel, Oil and Grease | 2,544 | 2,692 | 3,124 | 3,836 | 4,646 | 5,606 | 7,185 | 8,188 | 9,007 | 9,493 | 10,024 |
| 7. Electricity and Power | 997 | 1,032 | 1,113 | 1,247 | 1,416 | 1,637 | 1,803 | 1,918 | 2,100 | 2,290 | 2,331 |
| 8. Repairs and Maintenance: | | | | | | | | | | | |
| (i) Buildings, Fences and Structures | 4,203 | 4,692 | 4,661 | 5,150 | 5,348 | 5,813 | 7,127 | 7,968 | 7,727 | 9,880 | 11,755 |
| (ii) Plant and Machinery | 3,232 | 3,399 | 3,888 | 4,617 | 5,276 | 6,408 | 7,664 | 8,265 | 8,654 | 9,613 | 10,000(b) |
| 9. Railage and Cartage | 2,166 | 2,220 | 2,406 | 2,664 | 2,800 | 3,187 | 3,549 | 3,941 | 4,228 | 4,497 | 4,740 |
| 10. Depreciation: | | | | | | | | | | | |
| (i) Buildings and Structures | 1,532 | 1,562 | 1,608 | 1,669 | 1,746 | 1,826 | 1,896 | 2,216 | 2,497 | 3,020 | 3,896 |
| (ii) Plant and Machinery | 1,880 | 2,093 | 2,370 | 2,601 | 3,083 | 3,431 | 4,024 | 4,726 | 5,433 | 5,857 | 6,321 |
| 11. Other Expenses | 20,700 | 17,100 | 22,400 | 24,200 | 38,600 | 70,100 | 33,100 | 63,700 | 59,300 | 54,500 | 48,100 |
| 12. Total Non Factor Expenses | 42,540 | 40,592 | 51,360 | 56,353 | 73,381 | 109,515 | 83,916 | 115,469 | 111,592 | 114,951 | 114,750 |
| 13. Factor Expenses | | | | | | | | | | | |
| 14. Wages | 14,137 | 15,400 | 16,062 | 17,573 | 18,494 | 20,101 | 22,947 | 25,100 | 26,112 | 28,356 | 29,218 |
| 15. Interest | 6,386 | 6,552 | 6,714 | 6,981 | 7,178 | 7,203 | 7,727 | 8,772 | 9,266 | 10,134 | 11,317 |
| 16. Rent | 2,193 | 12,185 | 1,998 | 1,969 | 2,049 | 1,965 | 1,889 | 1,842 | 2,417 | 2,658 | 2,800(b) |
| 17. Rates | 2,713 | 2,913 | 3,224 | 3,524 | 3,865 | 4,357 | 5,171 | 5,389 | 5,868 | 6,329 | 7,000(b) |
| 18. Land Tax | 937 | 939 | 854 | 916 | 967 | 1,043 | 1,138 | 1,315 | 1,615 | 1,967 | 1,228 |
| 19. Total Factor Expenses | 26,366 | 27,989 | 28,852 | 30,963 | 32,553 | 34,669 | 38,872 | 42,418 | 45,278 | 48,444 | 51,563 |
| 20. Total Expenses(a) | 68,900 | 68,600 | 80,200 | 87,300 | 105,900 | 144,200 | 122,800 | 157,900 | 156,900 | 163,400 | 166,300 |
| 21. Net Farm Income(a) | 28,200 | 43,500 | 56,300 | 60,200 | 79,200 | 147,400 | 97,100 | 104,900 | 118,500 | 120,800 | 118,300 |
| 22. Gross Farm Income(a) | 97,100 | 112,100 | 136,500 | 147,500 | 185,100 | 291,600 | 219,900 | 262,800 | 275,400 | 284,200 | 284,600 |

TABLE III
Real Gross Output, Real Inputs and Real Net Output on New Zealand Farms 1921-1956
 £,000—1949/50 Prices
 Year ended 30th June

| ITEM | 1921/22 | 1922/23 | 1923/24 | 1924/25 | 1925/26 | 1926/27 | 1927/28 | 1928/29 | 1929/30 | 1930/31 | 1931/32 | 1932/33 |
|--------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. Non Factor Inputs | | | | | | | | | | | | |
| 2. Farm Requisites | 2,111 | 2,005 | 2,754 | 2,516 | 2,746 | 2,812 | 2,737 | 3,021 | 3,230 | 3,136 | 2,688 | 2,660 |
| 3. Fertiliser | 246 | 483 | 862 | 1,091 | 1,489 | 1,818 | 2,102 | 2,774 | 2,974 | 2,376 | 2,530 | 2,974 |
| 4. Lime | 115 | 142 | 231 | 260 | 251 | 263 | 276 | 277 | 288 | 284 | 233 | 235 |
| 5. Seeds Imported | 329 | 206 | 395 | 440 | 323 | 411 | 261 | 317 | 359 | 292 | 160 | 248 |
| 6. Fuel, Oil and Grease | 70 | 80 | 119 | 225 | 376 | 486 | 535 | 590 | 662 | 786 | 805 | 855 |
| 7. Electricity and Power | 481 | 521 | 567 | 589 | 612 | 627 | 675 | 611 | 776 | 875 | 898 | 968 |
| 8. Repairs and Maintenance: | | | | | | | | | | | | |
| (i) Buildings, Structures and Fences | 3,029 | 3,042 | 3,060 | 3,132 | 3,413 | 3,625 | 3,978 | 4,069 | 4,250 | 4,407 | 4,603 | 4,741 |
| (ii) Plant and Machinery | 1,114 | 1,197 | 1,347 | 1,561 | 1,769 | 1,920 | 1,984 | 2,050 | 2,202 | 2,294 | 2,219 | 2,243 |
| (iii) Reilage and Cartage | 1,408 | 1,436 | 1,470 | 1,515 | 1,470 | 1,554 | 1,719 | 1,798 | 1,890 | 1,912 | 1,912 | 2,184 |
| 9. Depreciation: | | | | | | | | | | | | |
| (i) Buildings and Structures | 1,773 | 1,789 | 1,800 | 1,842 | 2,008 | 2,132 | 2,340 | 2,394 | 2,500 | 2,592 | 2,707 | 2,789 |
| (ii) Plant and Machinery | 765 | 910 | 990 | 1,129 | 1,307 | 1,473 | 1,603 | 1,729 | 1,739 | 1,885 | 1,972 | 1,953 |
| (iii) Other Inputs | 10,520 | 11,558 | 12,597 | 13,636 | 14,675 | 13,995 | 13,315 | 12,635 | 11,955 | 11,275 | 10,595 | 9,915 |
| 12. Total Non Factor Inputs | 21,961 | 23,369 | 26,192 | 27,936 | 30,439 | 31,116 | 31,525 | 32,194 | 32,815 | 32,114 | 31,322 | 31,775 |
| 13. Net Output | 70,935 | 71,374 | 70,767 | 71,978 | 66,520 | 71,384 | 81,871 | 86,373 | 91,847 | 94,025 | 94,817 | 112,279 |
| 14. Gross Output | 92,896 | 94,743 | 96,959 | 99,914 | 96,959 | 102,500 | 113,396 | 118,567 | 124,662 | 126,139 | 126,139 | 144,054 |

(a) Provisional estimates

TABLE III—continued

| ITEM | 1933/34 | 1934/35 | 1935/36 | 1936/37 | 1937/38 | 1938/39 | 1939/40 | 1940/41 | 1941/42 | 1942/43 | 1943/44 | 1944/45 |
|--------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1. Non Factor Inputs | | | | | | | | | | | | |
| 2. Farm Requisites .. | 2,942 | 3,318 | 3,233 | 3,135 | 3,561 | 3,421 | 3,208 | 3,779 | 3,542 | 2,692 | 2,723 | 3,447 |
| 3. Fertiliser .. | 2,677 | 2,818 | 2,959 | 3,737 | 4,468 | 4,418 | 4,740 | 5,049 | 3,662 | 2,920 | 2,574 | 3,389 |
| 4. Lime .. | 235 | 267 | 316 | 382 | 426 | 430 | 427 | 574 | 598 | 679 | 719 | 777 |
| 5. Seeds Imported .. | 207 | 252 | 249 | 222 | 296 | 217 | 174 | 351 | 169 | 129 | 181 | 250 |
| 6. Fuel, Oil and Grease .. | 916 | 976 | 1,054 | 1,185 | 1,360 | 1,562 | 1,742 | 1,875 | 2,020 | 2,139 | 2,290 | 2,456 |
| 7. Electricity and Power .. | 1,008 | 1,039 | 1,058 | 1,075 | 1,095 | 1,105 | 1,125 | 1,178 | 1,196 | 1,194 | 1,195 | 1,196 |
| 8. Repairs and Maintenance: | | | | | | | | | | | | |
| (i) Buildings, Structures and Fences | 4,888 | 5,076 | 5,179 | 5,182 | 5,152 | 5,107 | 5,102 | 5,097 | 5,088 | 5,073 | 5,064 | 5,063 |
| (ii) Plant and Machinery | 2,305 | 2,475 | 2,475 | 2,690 | 3,025 | 3,127 | 3,185 | 3,206 | 3,100 | 3,171 | 3,400 | 3,585 |
| (iii) Plant and Cartage | 2,254 | 2,184 | 2,299 | 2,366 | 2,366 | 2,276 | 2,369 | 2,618 | 2,526 | 2,436 | 2,414 | 2,618 |
| 9. Depreciation: | | | | | | | | | | | | |
| (i) Buildings and Structures | 2,875 | 2,987 | 3,047 | 3,049 | 3,010 | 2,954 | 2,948 | 2,941 | 2,930 | 2,911 | 2,901 | 2,898 |
| (ii) Plant and Machinery | 1,972 | 2,031 | 2,080 | 2,207 | 2,430 | 2,628 | 2,790 | 2,846 | 2,918 | 2,948 | 2,847 | 2,940 |
| (iii) Other Inputs | 9,235 | 8,558 | 9,620 | 10,682 | 11,744 | 12,806 | 16,343 | 19,880 | 23,417 | 26,954 | 30,491 | 34,029 |
| 12. Total Non Factor Inputs | 31,514 | 31,862 | 33,569 | 35,912 | 38,933 | 40,051 | 44,153 | 49,394 | 51,166 | 53,246 | 56,799 | 62,648 |
| 13. Net Output .. | 117,157 | 112,192 | 117,872 | 120,146 | 117,125 | 110,097 | 112,090 | 123,286 | 115,419 | 107,429 | 102,399 | 110,032 |
| 14. Gross Output .. | 148,671 | 144,054 | 151,441 | 156,058 | 156,058 | 150,148 | 156,243 | 172,680 | 166,585 | 160,675 | 159,198 | 172,680 |

TABLE III—continued

| ITEM | 1945/46 | 1946/47 | 1947/48 | 1948/49 | 1949/50 | 1950/51 | 1951/52 | 1952/53 | 1953/54 | 1954/55 | 1955/56 |
|--------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| 1. Non Factor Inputs | | | | | | | | | | | |
| 2. Farm Requisites | 2,153 | 2,247 | 3,619 | 2,854 | 3,244 | 2,515 | 3,989 | 3,283 | 2,431 | 2,953 | 4,454 |
| 3. Fertiliser | 3,742 | 4,797 | 5,006 | 5,065 | 5,989 | 6,302 | 6,517 | 6,888 | 6,819 | 8,881 | 9,551 |
| 4. Lime | 765 | 811 | 910 | 977 | 1,044 | 1,076 | 1,182 | 1,104 | 1,164 | 1,351 | 1,500(a) |
| 5. Seeds Imported | 265 | 411 | 415 | 313 | 189 | 330 | 647 | 170 | 124 | 294 | 493 |
| 6. Fuel, Oil and Grease | 2,639 | 2,945 | 3,254 | 3,764 | 4,646 | 5,319 | 6,022 | 6,830 | 7,200 | 7,963 | 8,361 |
| 7. Electricity and Power | 1,197 | 1,223 | 1,275 | 1,313 | 1,416 | 1,467 | 1,485 | 1,534 | 1,564 | 1,574 | 1,579 |
| 8. Repairs and Maintenance: | | | | | | | | | | | |
| (i) Buildings, Structures and Fences | 5,073 | 5,100 | 5,142 | 5,208 | 5,348 | 5,485 | 5,596 | 6,075 | 6,449 | 7,115 | 8,153 |
| (ii) Plant and Machinery | 3,903 | 4,165 | 4,598 | 4,933 | 5,276 | 5,632 | 6,060 | 6,219 | 6,195 | 6,553 | 7,000(a) |
| 9. Railage and Cartage | 2,436 | 2,526 | 2,596 | 2,685 | 2,800 | 2,892 | 2,867 | 3,004 | 3,027 | 3,097 | 3,209 |
| 10. Depreciation: | | | | | | | | | | | |
| (i) Buildings and Structures | 2,911 | 2,945 | 2,997 | 3,063 | 3,146 | 3,226 | 3,292 | 3,568 | 3,794 | 4,186 | 4,796 |
| (ii) Plant and Machinery | 3,202 | 3,400 | 3,739 | 4,005 | 4,436 | 4,669 | 4,976 | 5,328 | 5,652 | 5,798 | 6,083 |
| 11. Other Inputs | 27,023 | 21,321 | 25,282 | 24,297 | 38,600 | 47,734 | 40,551 | 47,150 | 43,500 | 38,900 | 33,600 |
| 12. Total Non Factor Inputs | 55,309 | 51,891 | 58,833 | 58,477 | 76,134 | 86,647 | 83,184 | 91,153 | 87,919 | 88,665 | 88,779 |
| 13. Net Output | 105,366 | 114,694 | 112,369 | 118,635 | 108,950 | 104,132 | 105,932 | 107,013 | 111,724 | 115,595 | 122,869 |
| 14. Gross Output | 160,675 | 166,585 | 171,202 | 177,112 | 185,084 | 190,779 | 189,116 | 198,166 | 199,643 | 204,260 | 211,648 |

TABLE IV
Comparison of Net Farm Income and Output
1938/39, 1949/50 and 1955/56
 £ million

| | 1938/39 | | | 1949/50 | | | 1955/56 | | |
|--|----------------|----------------|-------------|----------------|----------------|-------------|----------------|----------------|-------------|
| | Current Prices | 1949/50 Prices | Price Index | Current Prices | 1949/50 Prices | Price Index | Current Prices | 1949/50 Prices | Price Index |
| <i>Non Factor Expenses and Non Factor Inputs</i> | | | | | | | | | |
| (a) Independently estimated (excluding depreciation) | 12.9 | 21.7 | 59.4 | 29.9 | 29.9 | 100.0 | 56.5 | 44.3 | 127.3 |
| (b) Depreciation | 2.8 | 5.6 | 50.0 | 4.8 | 7.6 | 63.2 | 10.2 | 10.9 | 93.6 |
| (c) Other expenses | 7.4 | 12.8 | 57.8 | 38.6 | 38.6 | 100.0 | 48.1 | 33.6 | 143.1 |
| Total | 23.1 | 40.1 | 57.6 | 73.3 | 76.1 | — | 114.8 | 88.8 | 129.2 |
| <i>Factor Incomes and Factor Inputs (Net Output)</i> | | | | | | | | | |
| (a) Interest | 7.2 | — | — | 7.2 | — | — | 11.3 | — | — |
| (b) Rent | 2.3 | — | — | 2.0 | — | — | 2.8 | — | — |
| (c) Land Tax | 1.1 | — | — | 1.0 | — | — | 1.2 | — | — |
| (d) Rates | 2.3 | — | — | 3.9 | — | — | 7.0 | — | — |
| (e) Wages | 12.8 | — | — | 18.5 | — | — | 29.2 | — | — |
| (f) Net Farm Income | 21.8 | — | — | 79.2 | — | — | 118.3 | — | — |
| Total | 47.5 | 110.0 | 43.2 | 111.8 | 109.0 | — | 169.8 | 122.8 | 138.3 |
| Gross Farm Income and Gross Farm Output | 70.6 | 150.1 | 47.0 | 185.1 | 185.1 | 100.0 | 284.6 | 211.6 | 134.5 |

In the base year 1949/50, the difference of £2.8m. between factor incomes in current prices and in 1949/50 prices needs explanation. This is accounted for by the difference of £2.8m. between depreciation in current prices and depreciation in 1949/50 prices. This arises from the fact that the depreciation as given in farmers' accounts—which is what we wish to use in terms of current prices—is based on historical cost of assets. Only in conditions of complete price stability extending over the life of the longest lived assets would the two figures for depreciation be the same in the base year.

1. For all items expressed in current prices we have used the terms *incomes* and *expenses*; when expressed in 1949/50 prices we have used the terms *output* and *input*.
- 2(a) By *Gross Farm Income* we mean the total gross receipts at farm gate from the sale of farm produce, net of commissions, transport, and other selling costs, and after allowing for inter-farm sales. It includes an adjustment for the value of changes in livestock inventory.
 - (b) *Gross Farm Output* means Gross Farm Income in 1949/50 prices.
3. *Factor Expenses* means those amounts paid out by farmers to factors of production used in farming, such as wages, rent and interest on borrowed capital; plus amounts paid by way of taxes such as rates and land tax² but not income tax.
- 4(a) *Non-Factor Expenses* means all expenses paid out by farmers other than factor expenses.
 - (b) *Non-Factor Inputs* means non-factor expenses in 1949/50 prices.
5. *Net Farm Income* means income available to farmers (before payment of income tax) and equals gross farm income less the sum of factor expenses and non-factor expenses.
6. *Factor Incomes* equal the sum of Factor Expenses and Net Farm Income, and equals Gross Farm Income minus Non-Factor Expenses.
7. *Net Output* equals Gross Farm Output minus Non-Factor Inputs.

Our definitions can be summarized in the following two identities:

$$\begin{aligned} \text{Gross Farm Income} &= \text{Non-Factor Expenses} + \text{Factor Incomes} \\ \text{(in current prices)} & \qquad \qquad \qquad \text{(i.e. Factor Expenses} + \\ & \qquad \qquad \qquad \qquad \qquad \qquad \text{Net Farm Income).} \end{aligned}$$

$$\begin{aligned} \text{Gross Farm Output} &= \text{Non-Factor Inputs} + \text{Net Output} \\ \text{(in 1949/50 prices)} & \end{aligned}$$

Factor incomes, or the total income arising in agriculture, represent the contribution made by agriculture to the national income in current prices. And net output represents agriculture's real contribution to the real national income or the net productivity of agriculture.

We can now review the figures given in Tables II and III. Table II gives our estimates of non-factor expenses, factor expenses, and net farm income for the years 1921/22 to 1955/56. Table III gives, for the same years, our estimates of non-factor inputs and net farm output. These two tables are closely related to each other. Up to and including line 11, identical items of expense and input appear on the same lines in each table and together they make up the total of non-factor expenses and non-factor inputs in line 12. From line 13 on, the two tables differ. In Table III we simply give in line 13, net output. In Table II total factor incomes are divided into the constituent items

2. In this respect we follow the current practice of New Zealand Department of Statistics in the official estimates of national income.

making up factor expenses, i.e. wages, interest, rent, rates and land tax in lines 14 to 18, and net farm income in line 21.

In making our estimates the basic data available were as follows:

- (i) The value of farmers' incomes and farm wage payments calculated from the frequency distributions of incomes given in Income Censuses of 1926, 1936 and 1945.
- (ii) The official estimates of net farm income for the post-war years.
- (iii) The official estimates of gross farm income for the years 1926-1956.
- (iv) The official estimates of volume of farm production for the years 1922-1956.

This data was then used in the following way. For those years for which income data is available—i.e. the census years and the post-war years—it was possible to make an estimate of total farm expenses by deducting net farm income from gross farm income. The problem then was to estimate farm expenses and net farm income for the intercensal years, given gross farm income for these years. These estimates were derived in two stages. First, for as many categories of expenditure as possible, independent estimates of each item were calculated either from official sources, e.g. rates and land tax collected, or as in the case of fertilizer, from the figures of local factory production plus imports.

For some other items, e.g. fuel used, and repairs and maintenance, consumption factors, secured from farm budget studies, were applied to the various components of the stock of equipment in use each year.

In making these estimates of money expenses and real inputs there was a considerable degree of interdependence. In some instances data on quantities were the more readily available and, after being expressed in terms of 1949/50 prices, special price indices were applied to convert them into current prices. In other cases the procedure was reversed and price indices were used to convert basic data expressed in current prices into terms of 1949/50 prices. The end result is the series of money expenses given in Table II and of real inputs given in Table III, excluding in both cases the item "other expenses" and "other inputs" in line 11.

These "other expenses" consist of the remaining known items of farm expenditure for which it was not possible to make direct estimates in the manner just described. They consist of the following items:

- (i) Transport costs and distributive margins on those commodities such as fertilizer, seeds, requisites, etc., which were calculated at ex factory cost or landed cost.
- (ii) Payments to farm contractors.
- (iii) Insurance premiums, accountancy and legal fees.
- (iv) General expenses.

For the census years and post-war years the total of these "other expenses" could be readily calculated from the identity:

Other expenses = Gross Farm Income — (Net Farm Income and Independently Estimated Expenses). There then remained the final problem of interpolation for the intercensal years.

The method adopted was to convert the censal year estimates of "other expenses" into 1949/50 prices, using for this purpose a new index of the price of farm input. These figures for other real inputs were then interpolated arithmetically and the interpolated real figures converted back into terms of current prices using the same index of prices of farm input.

Net farm income for each year was then calculated as the difference between gross farm income and total expenses, and net farm output as the difference between Gross Output and non-factor inputs.

In view of the rather arbitrary nature of this interpolation procedure, it was desirable that the results be checked as far as possible, against estimates of expenses or of income secured in some other way. Though the data available for such checks are not as plentiful or informative as we would wish, it has been possible to effect comparisons of our results with the results of some prewar sheep farm and dairy farm surveys. These comparisons encourage us to believe that our methods have not led to very grave error.

4. *Some Observations on the Results*

Some interesting conclusions emerge if we compare the changes between 1938/39 and 1955/56 in net farm income and net farm output. Such a comparison forms the substance of Table IV which shows in summary form the derivation of the net income and net output figures from Tables II and III and also gives indices of the price of non-factor and factor inputs. The figures for the base year 1949/50 are also shown.

This table shows that, between 1938/39 and 1955/56, whereas net output only rose by about 12 per cent, net farm income in the latter year was more than five times greater than in 1938/39.³ This disparity is much more than can be accounted for alone by changes in the general price level; the reasons for it, as the table shows, are as follows:

- (i) There was a favourable change in the farmers' terms of trade, the rise in the price level of output being greater than the rise in the price level of non-factor inputs.
- (ii) There was a shift in the relative distribution of total factor income away from interest and wages paid towards net farm income. This resulted from the fall in the incidence of mortgage debt due to inflation and repayment of mortgages, and from the virtually stationary farm labour force as between the two years.

3. A similar result to that secured in Table IV has been secured by deflating the expenditure and income figures from the pre- and post-war sample of dairy farms and sheep farms mentioned earlier. This comparison, which is given in the monograph, indicates that the increase in real non-factor inputs occurred mainly on sheep farms.

- (iii) Real net output did not rise nearly as much as real gross output because of the inordinate rise in non-factor inputs. This is a matter which calls for some further comment.

It is possible to think of three considerations, all of them as yet unmeasurable in their effects, which might be held responsible for the large increase in non-factor inputs, most of which it will be noticed is in the item "other inputs" which it was not possible to measure independently.

First, the permanent labour force was virtually the same in 1955/56 as in 1938/39 and many of the farm operations, e.g. fertilizer spreading, which would otherwise have required an increase in the farm labour force, have been done to an increasing extent by contractors using their own machinery. There is not a great deal of information available about farm expenditure on contractors' services and for this reason no attempt has been made to estimate them directly. They are included in the item "other inputs" and as such explain part of the increase in non-factor inputs.⁴

Secondly, it is possible that some proportion of non-factor inputs, in recent years, represents items of a quasi-capital nature (such as expenditure involved in bringing land back into full production) which farmers have been able to charge against revenue. There is, too, an effect arising from the considerable backlog of repairs and maintenance on buildings, fences, etc., which had accrued over the late 30's and the war years. The considerable rise in farm incomes dating from 1950 meant that farmers were in a position to make up for these arrears. So that actual spending on repairs and maintenance in recent years may well have been in excess of the notional figures we have allowed and this excess would form part of "other inputs". It is quite conceivable therefore that New Zealand farmers could continue to achieve the 1955/56 level of gross output with a lower level of non-factor inputs, which of course implies a higher level of net output. If the current fall in farm prices causes a fall in farm spending such a rise in net output could well be registered in 1958/59.

The third, and probably most important, factor accounting for the rise in non-factor inputs is that, with a stationary labour force, increased gross output has been achieved by a very great increase in the ratio of fixed and working capital to labour. The relatively small increase in net output which has resulted suggests that we may be running into diminishing returns to capital—but this requires careful econometric confirmation.

But in any event the results suggest that we should look closely at the possibility of reversing recent trends by increasing the ratio of

4. It is of course possible to argue that contract services should really be included in factor inputs or at any rate the labour content of those services; but apart from the lack of data mentioned above there is the objection that the group of firms engaged in contract work perform services for industries other than farming just as does say the machinery-repair industry, and there seems therefore more justification for treating them as an industry in their own right rather than, in some sense, as part of the farm labour force.

labour to capital. For much of the capital used in farming has a high import content and it appears that New Zealand is now entering into an era of fairly severe import scarcity just as it is also in the middle of an era when the ratio of labour to land and other resources has changed considerably in favour of the former.

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APPENDIX

Notes to Table II and III—Gross and Net Income and Output

The following notes give a brief indication of the sources used and estimation procedures adopted for each item given in Tables of Gross and Net Income and Gross and Net Output. Full details are available in the monograph referred to in the main text.

Tables II and III

- Line 2—Farm Requisites—from Import Statistics.
- „ 3—Fertilizer—from Industrial Production and Import Statistics.
- „ 4—Lime—from Industrial Production Statistics.
- „ 5—Seed Imported—from Import Statistics.
- „ 6—Fuel, Oil and Grease—expense rates applied to stock of trucks and tractors.
- „ 7—Electricity and Power—expense rates applied to stock of milking machines, shearing machines, etc.
- „ 8—Repairs and Maintenance—expense rates applied to stock of equipment and buildings.
- „ 9—Railage and Cartage—1949/50 figure derived from N.Z. Meat and Wool Boards' Economic Service sheep farm sample and New Zealand Statistics Departments' Dairy Farm sample—other years based on the 1949/50 figure adjusted by volume of production.
- „ 10—Depreciation—Derived from the series of real capital invested in farm improvements, plant and machinery.
- „ 11—Other Inputs—Interpolated in real terms between census years as described in the main text.

Table II: Gross and Net Income

- Line 14—Wages were interpolated for census years on the basis of an index of paid workers combined with the index of farm wage rates.
- „ 15—Interest payments from applying average interest rates to the rural mortgage debt and to the total of bank advances to stock and station agents.
- „ 16—Rent paid is the sum of reported rentals received for Crown land plus 6.5 per cent of the unimproved value of leasehold land.
- „ 17—Rates collected by rural local bodies as officially reported.
- „ 18—Land Tax collected as officially reported.
- „ 21—Net Farm Income for the years 1925/26, 1934/35, 1944/45 from the Official Censuses of Income. For 1938/39, 1946/47 to 1955/56 from Official National Income Statistics. For other years net farm income equals gross farm income minus total expenses.
- „ 22—Gross Farm Income from Official Statistics.

Table III: Real Gross and Net Output

- Line 13—Line 14 minus line 12.
- „ 14—Derived from the Official Statistics of Volume of Farm Production.

ANOTHER LOOK AT THE ACCELERATION RELATIONSHIP AND EQUILIBRIUM GROWTH

1. *The Basis of the Acceleration Principle*

The period of World War II marks a fundamental shift in the formulation of the acceleration principle. We do not here refer to those more sophisticated modifications in the direction of a more "flexible accelerator", such as the introduction of distributed lags or allowance for unused capacity on the one hand or bottlenecks on the other which have been designed to make the accelerator more "realistic". Rather, we are concerned with something much more fundamental. In particular, we are concerned here with the change from the pre-war conception of induced investment as a function of the rate of change of *consumption* to the latter-day view that it is a function of changes in income (or output).

It is worth tracing through this change of ground by economists and examining the arguments by which it is justified. In early post-Keynesian writings the acceleration principle was conceived to express, following J. M. Clark,¹ a relationship between the level of investment and the rate of growth of consumption. Thus, to take two examples:

Carefully stated, it [the acceleration principle] can be made to yield information concerning the movements of investment from a knowledge of the movements of consumption.—Samuelson.²

The Acceleration Principle . . . concerns exclusively the effect of a net increase in consumption expenditures upon induced investment expenditures.—Hansen.³

In the post-war period, parallel with the renewed interest of economists in problems of economic growth—in which sector the acceleration relationship is seen as the determinant of a "required" rate of investment rather than as a causal explanation of the level of investment—there has been a virtually unanimous move away from this position. Now investment is related to the growth of income, not consumption. Thus:

This error of thinking in terms of a ratio between capital and consumption rather than between capital and total output or income is very frequent in economic literature. It probably goes back to the idea that consumption is the final aim of production and that therefore all capital is used for the production of consumer goods. This is true in a stationary society.—Domar.⁴

It will be noticed that I have posed the problem in terms of the effect on investment of changes in *output* as a whole (which of course includes investment); not, as has perhaps been more usual, in terms of the effect of changes in consumption only. In spite of the apparent circularity in my formulation, it seems to me to be the right one.—Hicks.⁵

1. "Business Acceleration and the Law of Demand", *Journal of Political Economy*, 1917.

2. "A Synthesis of the Principle of Acceleration and the Multiplier", *Journal of Political Economy*, Dec. 1939, p. 786.

3. *Fiscal Policy and Business Cycles*, New York, 1941, p. 274.

4. "The Problem of Capital Accumulation", *American Economic Review*, Dec. 1948, p. 789n.

5. *Trade Cycle*, Oxford, 1950, p. 38.

This change of view has been endorsed by Baumol,⁶ Goodwin,⁷ and others, as well as by Hansen himself.⁸ Let us look at the arguments put forward in favour of the new position:

. . . but what is the meaning of the ratio between the stock of capital and that part of its output which is sold to consumers? Surely the whole plant and equipment of General Motors is not used for the production of passenger automobiles (more correctly—only those to be used for non-business purposes), while trucks and Diesel engines are produced in mid-air. It hardly makes any difference to the management from the point of view of utilization of capital, its profitability, investment prospects, etc., whether the capital is used to produce consumption goods, materials to be used for further production, or investment goods.—Domar.⁹

The building of houses, for instance, reckons as investment activity; but an increase in the demand for new houses induces investment in brickworks, sawmills, and glassworks, just in the same way as an increase in the demand for cigarettes induces investment in cigarette-making machinery.—Hicks.¹⁰

At first sight, this shift of position appears as little more than a minor change in definition, and the arguments for it seem convincing enough. However, the change is basic, because it represents a very important change of principle. The *essence* of the acceleration principle as an explanation of investment,¹¹ is that it proceeds from the premise that the demand for investment goods is a *derived* demand. From this it follows immediately that the demand for investment goods must derive from the demand for final consumption goods, since these are the only goods *which are bought for their own sake*, by definition. The demands for all other types of output are themselves derived from elsewhere, ultimately from the demand for consumption goods.

Therefore, if we think of the acceleration relationship as determining in some sense an equilibrium or "required" rate of investment, it is not good enough merely that the rate of investment matches changes in *output*. (Indeed, to insist that it is, is to come perilously close to re-asserting Say's Law—of which more hereafter.) There must also be congruence between the growth of investment and the expansion of consumption. It is basic to the job of the acceleration principle that it state this necessary congruence.

Perhaps the point may best be established by taking an extreme example. According to the Domar-Harrod formula for equilibrium growth, the "required" rate of growth of investment is given by

$\frac{\Delta I}{I} = a\sigma$, where a is the marginal propensity to save and σ the "capital coefficient".¹² Now consider the limiting case when $a = 1$. Then if, say $\sigma = \frac{1}{4}$, the equilibrium rate of growth of investment will be $1 \times .25 = .25$ or 25 per cent. Now in what sense can the system

6. *Economic Dynamics*, New York, 1951, p. 39.

7. *Income, Employment and Public Policy* (Essays in Honour of Alvin H. Hansen), New York, 1948, Part I, Ch. V.

8. *Business Cycles and National Income*, New York, 1951, p. 173.

9. E. D. Domar, *loc. cit.*, p. 789.

10. J. R. Hicks, *op. cit.*, p. 38.

11. For the present we are ignoring altogether autonomous investment; care will be taken of this in Section 4 following.

12. Vide E. D. Domar, "Expansion and Employment", *American Economic Review*, March 1947, p. 41.

be said to be in equilibrium when capital goods are being piled up at a compound rate of 25 per cent, *while consumption remains fixed?* In what sort of output would this rapidly growing investment be embodied? Certainly not in the form of sewing machines or bakers' ovens, for the demand for clothing and bread is stationary. Nor could the investment be made in equipment for producing sewing machines or ovens, nor again in buildings to house such equipment, for the same reason. And so on. J. B. Clark has suggested that, in these circumstances, there is no reason why the system should not be geared to "build more mills that should make more mills for ever".¹³ But the elementary point remains: who is going to buy such mills, and for what purpose?

The dilemma arises, of course, from the fact that savings (investment), as Keynes had sternly to remind us, must be embodied in physical forms which are technically dated and always involve some carrying costs. So long as the rate of interest on money is positive, it will never pay a private entrepreneur to store up savings in investment goods, the marginal productivity (realizable) of which is zero in virtue of the stationary consumer demand. As Dobb has pointed out:

J. B. Clark's picture . . . can never be actualized, since in the real world mills are always specialized to a particular current stream of demand connected with consumption in the near future, and not a stream of demand stretching to an infinite future. Hence when consumption changes, the effect is transmitted back along the stream of demand to all the intermediate and constructional processes connected with it and adapted to it.¹⁴

This seems clear enough. Nevertheless, we still have to meet the argument of the "moderns" that capital goods themselves require other capital goods to produce them, and hence that an increase in investment will induce (or "require") a further increase in investment, in the same manner as will an increase in consumption. Now it is certain that, *if* there is an increase in investment, then this primary increment of investment will induce a secondary increment of investment. But how does the primary increment in investment come about in the first place? It is certainly true, as Domar points out, that production of trucks requires capital quite as much as does the production of cars. But there is a vital distinction between cars and trucks: cars are bought for their own sake; trucks are not! Hence, an increase in the demand for trucks—and for capital with which to produce them—presupposes an increase (or anticipated increase) in the demand for goods requiring transportation. Similarly, with Hicks's example: additional cigarettes will be bought for their own sake; but an increase in the production of houses (investment) presupposes an increased demand for house-room—essentially a consumer good. Indeed, if this increased demand for house-room, at the consumer level, were not forthcoming, the new house-building could not proceed—for long.

13. J. B. Clark's preface to the English translation of Rodbertus' *Over-production and Crises*, quoted from M. Dobb, *Political Economy and Capitalism*, London, 1937, p. 92.

14. M. Dobb, *op. cit.*, p. 104.

2. Investment as a Function of the Rate of Change of Consumption

It will be seen, therefore, that there is merit in both points of view, the old and the new. On the one hand, investment is never undertaken for its own sake. (We are still abstracting from autonomous investment.) Ultimately, investment has its justification in increased output of consumer goods. On the other hand, an increase in the rate of investment, induced by expanding consumption demand, will certainly induce further investment outlays in turn.

Fortunately, it appears possible to combine the requirements of both viewpoints. Let us call the immediate investment required (say bakers' ovens) in the period dt *primary* investment, and denote it by I_1 . Then, using the notation of the differential operator, viz., $D^n C = \frac{d^n c}{dt^n}$, and taking v as the "acceleration coefficient":

$$I_1 = v \frac{dc}{dt} = vDC.$$

Thus, for example, if the consumption of bread were expanding linearly such that $C = C_0 + bt$, I_1 would be equal to vb and constant, with oven-makers supplying a fixed quantity of ovens in each period. Apart from replacement expenditures by bakers and oven-makers, no further investment outlays would be indicated.

However, if consumption (of bread) were expanding at an accelerating rate, I_1 would also be required to expand so that an increasing quantity of ovens could be supplied to bakers. The increment in primary investment which would be called forth would be:

$$DI_1 = vD^2C.$$

Now this increment in primary investment will require *secondary* investment to sustain it. If we call this second-round investment I_2 , then:

$$I_2 = vDI_1 = v^2D^2C$$

and $DI_2 = v^2D^3C$.

In turn, any increment in secondary investment will require a *tertiary* investment outlay, so that:

$$I_3 = vDI_2 = v^3D^3C.$$

This process may be continued indefinitely, so that we get an acceleration relationship of the form:

$$\begin{aligned} I &= I_1 + I_2 + I_3 + \dots + I_n + \dots \\ &= vDC + v^2D^2C + v^3D^3C + \dots + v^nD^nC + \dots \quad \dots \quad (1) \end{aligned}$$

Thus, we obtain an Accelerator which, like the Multiplier, is given as the limiting sum of an infinite series.¹⁵

15. This is a peculiar-looking series, although it is not an uncommon form in certain problems of physics. For the economist, the relationship (1) may perhaps best be looked at as a rudimentary input-output form, with each term of the series representing successive stages in the production process. If we had columns representing consumption and the successive stages of the provision of capital equipment (see Table 1 below), the flow through each column would depend upon the rate of change in the flow through the preceding column.

It is clear from (1) that, if consumption is stationary, i.e. if $dC/dt = 0$, then the required investment is zero; if consumption grows linearly, i.e. if dC/dt is constant, the required investment will also be constant. An interesting case is that where consumption grows at a steady rate such that $C = C_0 e^{rt}$ and hence $D^n C = r^n C$, so that:

$$I = vrC (1 + vr + v^2 r^2 + v^3 r^3 + \dots) \dots \dots \dots (2)$$

If $vr \geq 1$, then this series is divergent, and hence there would be no amount of investment which would satisfy the equilibrium conditions. For example, if $v = 4$ ($\sigma = \frac{1}{4}$) and r were equal to .25 or 25 per cent, there would be no amount of investment which would provide sufficient capital to sustain this rate of growth of consumption. The case is analogous to the divergent Multiplier when the marginal propensity to consume is greater than unity, and may be ruled out as a practical possibility. If $vr < 1$, the r.h.s. of (2) converges, so that:

$$I = \frac{vr}{1 - vr} C_0 e^{rt}$$

or generally in terms of the differential operator:

$$I = \frac{vDC}{1 - vD} \dots \dots \dots (3)$$

from (1).

Thus, we have arrived at a form of the accelerator which explicitly relates the level of required or induced investment to changes in *consumption*. Moreover, this formulation meets the point that investment as well as consumption goods require capital for their production; for an increment of investment, which is itself called forth by an expansion of consumption, will in turn induce further investment. But the causal sequence, in the nature of a chain-reaction, must be maintained. Investment, of itself, cannot justify investment; investment cannot pull itself up by its own bootstraps. Once this condition is introduced, we eliminate the circularity which Hicks is constrained to recognize in his own formulation. Indeed, given this fundamental boundary condition, it can be shown that our form of the acceleration relationship is only a particular case of the present day concept of the relationship which makes investment a function of the rate of change of income. Immediately from (3):

$$I - vDI = vDC \dots \dots \dots (4)$$

so that

$$I = vDY,$$

where Y is income.¹⁶

Solving (4) for I we get the general solution:

$$I = Ae^{t/v} - e^{t/v} f e^{-t/v} DC dt,$$

where A is an arbitrary constant and $Ae^{t/v}$ the complementary function. Moreover, since our particular equation (1) requires that if C is constant so that $\frac{dC}{dt} = 0$, $I = 0$, then A must equal zero and we have the particular solution:

16. This result may be obtained directly from (1) by differentiation and then subtraction from (1).

$$I = - e^{t/v} \int e^{-t/v} DC dt \dots \dots \dots (5)$$

which gives us the general functional dependence of I upon $\frac{dc}{dt}$ in more compact form than (1).¹⁷

3. *The Accelerator and Equilibrium Growth*

The basic difference between our form of the accelerator and that currently in general use may be illustrated by reference to the Harrod-Domar model of equilibrium growth. Consider, for example, the consequences for equilibrium growth of a change in the marginal propensity to save and, hence, in the rate of expansion of consumption. Since $\Delta C = (1 - a) \Delta Y$ by definition, any change in the marginal propensity to save, a , will alter the relationship between the increment of consumption and the increment of income. Although the Harrod-Domar conditions are designed to maintain an appropriate relationship between investment and increments of income, they do not, in these circumstances, achieve the same in respect of the increments of consumption.

Let us take an arithmetic example in period form. For this purpose, we need the accelerator:

$$I_t = v \Delta C_{t-1} + v^2 \Delta^2 C_{t-2} + v^3 \Delta^3 C_{t-3} + \dots$$

which can be shown to be the particular form of the simple unlagged accelerator:

$$I_t = v (Y_t - Y_{t-1}).^{18}$$

In our example, we take the marginal propensity to save as 10 per cent and the "capital coefficient" as $\frac{1}{4}$ ($v = 4$) over the first five periods. This warrants a rate of growth of $2\frac{1}{2}$ per cent. In the sixth period, the marginal propensity to save is supposed to rise to 20 per cent. Hence a new rate of growth of investment of 5 per cent is indicated.

The side of the table to the left of the double line sets out the changes of income, investment and consumption appropriate to the Harrod-Domar model. It may easily be checked that the required relationship between *total* investment and the increments of income, the *sine qua non* of equilibrium in the model, is maintained throughout. This would, on the face of it, confirm Domar's explicit belief that changes in the marginal propensity to save and the "capital coefficient" are consistent with equilibrium growth.¹⁹

However, turning to the r.h.s. of the table where our accelerator is in action, it may be seen at a glance that the change in the marginal propensity to save between the fifth and sixth periods not only ruptures

17. It will be noticed that the arbitrary constant arising from this integration will have merged with the complementary function and hence will also equal zero.

18. See Appendix where the case of a lagged accelerator is discussed.

19. "These results were obtained on the assumption that a , the marginal propensity to save, and σ , the average productivity of investment, remain constant. The reader can see that this assumption is not necessary for the argument, and that the whole problem can be easily reworked with variable a and σ ", E. D. Domar, "Expansion and Employment", *loc. cit.*, p. 42.

TABLE I

| Period | Y | I | C | ΔC | Induced Investment | | | | |
|--------|---------|--------|---------|------------|-----------------------|------------------|-----------------|--------------------|------------------------|
| | | | | | I ₁ | I ₂ | I ₃ | I ₄ &c. | I |
| 1 | 1000 | 100 | 900 | 22.5 | 90 | 9 | .9 | .1 | 100 |
| 2 | 1025 | 102.5 | 922.5 | 23.06 | 92.25 | 9.23 | .92 | .1 | 102.5 |
| 3 | 1050.62 | 105.06 | 945.56 | 23.64 | 94.56 | 9.46 | .95 | .09 | 105.06 |
| 4 | 1076.89 | 107.69 | 969.20 | 24.23 | 96.92 | 9.69 | .97 | .11 | 107.69 |
| 5 | 1103.81 | 110.38 | 993.43 | 22.08 | 88.32 <i>99.34</i> | 0 <i>9.93</i> | 0 <i>.99</i> | 0 <i>.12</i> | 88.32 <i>110.38</i> |
| 6 | 1131.41 | 115.90 | 1015.51 | 23.18 | <i>92.72</i> | <i>18.55</i> | <i>3.70</i> | <i>.93</i> | <i>115.90</i> |
| 7 | 1160.38 | 121.70 | 1038.69 | 24.34 | <i>97.36</i> | <i>19.47</i> | <i>3.90</i> | <i>.97</i> | <i>121.70</i> |
| 8 | 1190.81 | 127.78 | 1063.03 | 25.56 | <i>102.22</i> | <i>20.44</i> | | | |
| 9 | 1222.75 | 134.17 | 1088.58 | 26.83 | <i>107.34</i> | | | | |
| 10 | 1256.29 | 140.88 | 1115.42 | | | | | | |

Figures on the r.h.s. represent the investment which would actually be induced, those in italics the investment "required" to satisfy the conditions for equilibrium growth.

equilibrium, but does so explosively. This rupture of equilibrium, it will be seen, is brought about because of the *distribution* of investment flows and investment goods capacity. In some sense, a rise in the propensity to save requires that the structure of production should become more "roundabout". Resources have to flow from the lower stages of investment goods production to the higher stages. This could only occur if two (very unreal) additional conditions were fulfilled:

- (1) Capital goods would have to be of the nature of Professor Swan's "mechano sets".²⁰ It must be possible to transmute (say) bakers' ovens and capacity for making bakers' ovens into steel mills and capacity for making steel mills, and so on, since the higher stages of production have suddenly to be expanded at the expense of the lower stages.
- (2) The initiative to expand investment must come in the industries furthest removed from the consumption goods industries, the change in demand for whose products has precipitated the new situation. Incidentally, the investment decisions so taken must be in the opposite direction to those indicated by the change in consumer demand.

This second point highlights a general operational difficulty involved in the Harrod-Domar conception of equilibrium growth, once

20. T. W. Swan: "Economic Growth and Capital Accumulation", *Economic Record*, November 1956.

we allow the parameters of the system to change. According to their model, a rise in the marginal propensity to save requires that the rate of investment should be *increased*. But a rise in the marginal propensity to save can only manifest itself (in the market) by a slowing down of the rate of growth of consumption and hence the demand for consumer goods. The natural reaction of entrepreneurs to this will be to *reduce* their investment outlays, not increase them. The decision to reduce investment would, of course, first be taken in the consumption goods industries; but this would soon be transmitted back along the structure of production.

It may be objected that these models of equilibrium growth are merely "ideal" statements of conditions which do not claim any causal or operational significance. However, both Domar and Harrod tend to give them one. Thus, Domar suggests that equilibrium expansion may be attainable, if the government were prepared to underwrite the appropriate growth of income, or if entrepreneurs themselves were prepared to exercise a "kind of collective faith", as Mrs. Robinson has described it. Harrod also believes that entrepreneurs may be willing to tread the path of equilibrium growth and to expand their investments at the required rate, so long as their maturing investments are continually justified by an appropriate growth of income.²¹ But as our arithmetic example shows, an appropriate expansion of *income* is not of itself a sufficient condition for equilibrium expansion.

Finally, it may be pointed out that our argument of this section in no way depends on lags. Introduction of a lagged acceleration relationship would of course enormously intensify the difficulties of transition from one value of the marginal propensity to save to another.

4. *Autonomous Investment*

We have argued above that the notion of investment inducing further investment presupposes that the primary increment of investment is itself "justified" by an appropriate expansion of consumption-demand. This is not true, by definition, of autonomous investment; and we must therefore take account of this.

Autonomous investment may be divided into two broad categories: (i) that investment which does not have to satisfy the normal commercial canons of profitability, e.g. churches, armaments, and WPA projects; and (ii) that investment which, while having to be justified by productivity criteria, does not depend upon additional market-demand either currently or in the immediate future, e.g. cost-reducing innovations, new products which can capture market-demand from old products, and long-range investment projects such as dams, irrigation schemes, oil exploration, etc.

21. Cf. e.g. "The line of output traced by the warranted rate of growth is a moving equilibrium, in the sense that it represents the one level of output at which producers feel in the upshot that they have done the right thing, and which will induce them to continue in the same line of advance . . .", R. F. Harrod, *Economic Journal*, March 1939, p. 22.

In practice, of course, it may often be difficult to draw a clear-cut line between investment which is autonomous and that which is induced. This is perhaps most true in the case of innovations. Many innovations only become economical if a large output can be assured and consequently their introduction often depends upon some actual or anticipated expansion of demand. More generally, the introduction of innovations, as well as many other forms of autonomous investment, will depend upon the general climate of expectations, and this will clearly depend to some extent on the degree in which demand conditions generally are expansive. However, conceptually the distinction between autonomous and induced investment is clear enough.

At all events, the important point for the present discussion is that an increase in autonomous investment will induce further investment in precisely the same way as an increment of consumption. Therefore, if A is autonomous investment and I_n is net investment, then:

$$I_n = A - e^{t/v} \int e^{-t/v} D (A + C) dt.$$

Perhaps the clearest-cut case of autonomous investment is pure replacement expenditure. Moreover, an increment of replacement expenditure will have the same Multiplier and Acceleration effects as an increment of consumption or of autonomous investment. Therefore, if R is pure replacement expenditure and I_g is gross investment:

$$I_g = A + R - e^{t/v} \int e^{-t/v} D (A + C + R) dt$$

and gross income Y_g will be:

$$Y_g = A + C + R - e^{t/v} \int e^{-t/v} D (A + C + R) dt. \quad \dots (6)$$

The acceleration relationship set out in (6) is, of course, much more cumbersome than the usual formulation; but in extenuation the writer may claim for it three important advantages: (i) it clearly distinguishes between the dependent and independent variables in the relationship, thus avoiding the circularity of the more usual formulation; (ii) this statement of the independent variables has important analytical advantages particularly in study of the trade cycle because the rates of change of consumption, autonomous investment and replacement expenditure are likely to vary as against each other during various phases of the cycle; and (iii) the formulation here given shows explicitly that increments of autonomous investment or replacement expenditure are not merely additive, but exert a strong leverage on total investment in the same way as an increase in consumption.

5. Conclusion

The fundamental flaw in the present-day approach to models of equilibrium growth and to the Acceleration Principle (which is involved in all these models, directly or indirectly) is the belief that it is the growth of *income* which justifies the required rate of investment. This belief comes very close to re-asserting Say's Law. This alleged "law", it will be recalled, began from the premise, correct in itself,

that in the process of production sufficient *income* will be distributed to the factors of production as will be required to purchase the total product (since gross-output = gross-income). However, it then proceeded to commit the *non sequitur* that therefore "supply creates its own demand". This doctrine was attacked at various times by a whole host of writers, including Malthus, Sismondi, Marx, Rosa Luxemburg, and Hobson. But so long as strong, if not noticeably smooth, capitalist expansion continued, Say's Law remained virtually undisputed within the academic halls. It was left to Keynes (or perhaps more correctly the Great Depression) finally to explode it. Although people may receive sufficient income to clear total output, they may not choose to spend it.

It is an interesting commentary upon the way economic "truths" have a way of changing with the state of the markets that, with the return of "normal" economic conditions (if war, rebuilding from war, and preparation for more war may be called normal human pursuits), economists have started to forget that, ultimately, it is consumption which must justify production. The term "under-consumption" has almost disappeared from economic literature. Now we say that, *if only savings are spent (invested)*, there need be no failure of effective demand. But can we pile up our savings in investment goods without inquiring into the *demand* for investment goods? Certainly private investors are *not* going to "spend" their savings in this fashion, unless there is maintained an effective demand for the products of the investment goods so created. To assert otherwise is to go along, at least half way, with M. Say; for isn't it to say that a sufficient supply of investment goods will create its own sufficient demand?

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APPENDIX

Consider the case when there is a one-period lag between an increment of consumption and the induced primary investment, a one-period lag between an increment in primary investment and the corresponding secondary investment outlay, and so on. Then:

$$\begin{aligned} I_t &= v \Delta C_{t-2} + v^2 \Delta C_{t-4} + v^3 \Delta C_{t-6} + \dots \\ &= v (C_{t-1} - C_{t-2}) + v^2 (C_{t-2} - 2C_{t-3} + C_{t-4}) \\ &\quad + v^3 (C_{t-3} - 3C_{t-4} + 3C_{t-5} - C_{t-6}) + \dots \end{aligned}$$

Using the shift operator E ,* we get:

$$\begin{aligned} I_t &= vC_{t-1} (1 - E^{-1}) + v^2 C_{t-1} E^{-1} (1 - E^{-1})^2 \\ &\quad + v^3 C_{t-1} E^{-2} (1 - E^{-1})^3 + \dots \\ &= \frac{vC_{t-1} (1 - E^{-1})}{1 - vE^{-1} (1 - E^{-1})} \end{aligned}$$

* For the algebra of the shift operator, E , see R. D. G. Allen, *Mathematical Economics*, London (1956), Appendix A.

Hence:

$$I_t - vE^{-1}I_t + vE^{-2}I_t = vC_{t-1} - vE^{-1}C_{t-1}$$

$$\text{or } I_t - vI_{t-1} + vI_{t-2} = vC_{t-1} - vC_{t-2}$$

$$\text{and } I_t = v(Y_{t-1} - Y_{t-2})$$

which is the usual form of the accelerator with one-period lag. Although investment in period t depends upon the change of income between the two previous periods, that change in income in turn depends upon the movement of consumption over a succession of *previous* periods.

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NOTES

PROFESSOR HICKS' THEORY OF INVESTMENT AND POST-WAR INVESTMENT FIGURES IN AUSTRALIA AND THE UNITED STATES¹

On the first page of the preface of *A Contribution to the Theory of the Trade Cycle*² Professor Hicks states, "if the theory which is here offered stands up to theoretical criticism, the next stage will be the concern of statisticians, econometrists, and (most of all) economic historians, who will have to see whether it does prove possible to make sense of the facts in the light of these hypotheses". This note is a first step in the "next stage", a comparison of Professor Hicks' theory of investment with post-war investment figures in Australia and the United States. The comparison shows that, at least in respect to investment behaviour it is "possible to make sense of the facts in the light of Professor Hicks' hypotheses". It also suggests factors that do not support Professor Hicks' model as a whole. The model provided a good framework for examining investment behaviour; but the examination suggested substantial modifications to at least one hypothesis that Professor Hicks considers important.

The post-war period was chosen because of a belief that some major criticisms of Professor Hicks' model have less weight when the model is used to explain the behaviour of Western economies since the Second World War rather than that in earlier periods. Professor Hicks' theory of investment can be summarized as follows: investment is composed of two parts, one of which, induced investment, is related to past changes in output, while the other, autonomous investment, increases by a constant percentage each year. Critics have questioned whether the assumption that autonomous investment increases at a constant rate is a useful one. Might not fluctuations in the level of this type of investment, which is all investment not induced by changes in the level of output, also be significant in the trade cycle?³ This is an important criticism, but since the war there has been in both Australia and the United States an underlying buoyancy in investment that suggests that a part of investment may have increased steadily, despite small falls in the level of real output. Thus the theory is more likely to be applicable to the post-war period than to earlier periods.

In order to facilitate comparison with published figures for investment some slight changes have been made to the theory as set forth in *A Contribution to the Theory of the Trade Cycle*. The most important of these is that gross figures for investment and income have

1. I am indebted to Dr. K. A. Blakey for commenting on a draft of this note.
2. London, Oxford University Press, 1950.
3. See e.g. A. D. Knox, "On a Theory of the Trade Cycle", *Economica*, Vol. 17 (Aug. 1950), pp. 325-326.

been used, whereas Professor Hicks' model is in terms of net investment and income. This change was made because of the great difficulty in distinguishing between replacement and net investment statistics. It is supported by the view that, even in theory, it is better not to make the distinction.⁴ Secondly, in *A Contribution to the Theory of the Trade Cycle* autonomous investment increases at a constant geometric rate over time, i.e. the investment equation may be written

$$I_t = A(c)^t + b(Y_{t-1} - Y_{t-2}) \dots \dots \dots (1)$$

(where I_t is investment and Y_t income in year t , t is time, b the acceleration coefficient, and A and c parameters relating to autonomous investment.)

For convenience this has been linearized, so that autonomous investment increases at a constant arithmetical rate over time, and the investment equation is:

$$I_t = A + b(Y_{t-1} - Y_{t-2}) + ct \dots \dots \dots (2)$$

Over all but very long periods of time (say over periods under 15 years) there is no great difference between the two equations. Equation (2) will be compared with Australian and American investment figures. It will be noticed that figures for the United States have been taken back closer to the war years than those for Australia. It was desired to compare the theory with a relatively free enterprise economy. The United States dismantled her war-time controls more quickly than did Australia.

The "White Paper" national income and expenditure estimates for Australia are in money terms. The first step is to convert to real terms those for gross national product and gross private domestic investment. The published figures were deflated by means of a composite index which is a weighted average of the C series retail prices and the basic materials and foodstuffs wholesale prices indexes published in the *Monthly Review of Business Statistics*. The C series index was given twice the weight, in the average, of the wholesale prices index. The figures for the composite index are given in Table I. In Table I the deflated figures for gross national product and gross private domestic investment less farm stocks are also given.⁵

It can be seen by inspection that to lag investment one year behind changes in gross national product is likely to give the best results. The multiple correlation coefficient and regression equation for investment on time and changes in gross national product (lagged one year) were calculated by the classical least squares method. A multiple correlation coefficient of .98 was obtained, together with the following regression equation:⁶

$$I_t = 422 + \frac{.61}{.05} (Y_{t-1} - Y_{t-2}) - \frac{5.8t}{3.5}$$

At first equation (2) seems upheld by the strikingly high value ob-

4. See e.g. A. D. Knox, *op. cit.*, pp. 321-322.

5. As farm stocks are greatly influenced by factors outside Australia, it was thought better to exclude them from the investment figures.

6. The figures under the coefficients are the standard errors adjusted for degrees of freedom.

TABLE I
Real Income and Investment, Australia 1947-48 to 1956-57

Current value figures in millions of pounds deflated by
the composite index

| Year | Composite Index* | Deflated Gross National Product | Change in G.N.P. | Deflated Gross Private Domestic Investment† |
|------------------|------------------|---------------------------------|------------------|---|
| 1947-48 | 108 | 1860 | | |
| 1948-49 | 120 | 1898 | 38 | 333 |
| 1949-50 | 133 | 2044 | 146 | 411 |
| 1950-51 | 155 | 2337 | 293 | 516 |
| 1951-52 | 189 | 2042 | -295 | 589 |
| 1952-53 | 205 | 2052 | 10 | 235 |
| 1953-54 | 208 | 2191 | 139 | 385 |
| 1954-55 | 210 | 2334 | 143 | 496 |
| 1955-56 | 219 | 2411 | 77 | 472 |
| 1956-57 | 229 | 2464 | 53 | 399 |

* Base 1946-47 = 100.

† Excluding changes in farm stocks.

Sources: For 1948-49 and later years the undeflated figures for G.N.P. and investment were taken from the 1957 White Paper on *National Income and Expenditure*. For 1947-48 they were taken from the 1956 White Paper. £15m. was added on to the 1947-48 figure for G.N.P. to make it more comparable with those of later years. The composite index was calculated as described in the text from indexes published in the *Monthly Review of Business Statistics*.

tained for the multiple correlation coefficient, but examination of the regression equation suggests that including "t" has no significant effect.⁷ If "t" is omitted so that the investment equation becomes

$$I_t = A + b (Y_{t-1} - Y_{t-2})$$

a correlation coefficient of .97 is obtained together with the regression equation

$$I_t = 396.9 + .61 (Y_{t-1} - Y_{t-2})$$

Thus a modified form of Professor Hicks' theory of investment fits the facts well in the post-war period in Australia. Two interesting points emerge from his comparison with these facts. First there appears to have been a large and stable amount of autonomous investment in Australia over the period examined, but this investment seems to be at a constant, rather than increasing level over time.⁸ Secondly the acceleration coefficient is much smaller than Professor Hicks assumed. *A Contribution to the Theory of the Trade Cycle* assumes an acceleration coefficient greater than one. Professor Swan has shown that this assumption is not necessary to obtain the behaviour shown by the model.⁹ Nevertheless .61 is a lower value for the acceleration principle

7. Using assumptions similar to those outlined below when testing the hypothesis that "b" is greater than one, the hypothesis that "c" is equal to zero is accepted at the .05 level of significance.

8. Probably between a quarter and a third of this "autonomous investment" was undertaken from motives of replacement, and would not correspond to autonomous investment in Professor Hicks' model.

9. "Progress Report on the Trade Cycle", *Economic Record*, Vol. XXVI (Dec. 1950), p. 198.

than those generally considered plausible. If it is assumed that the observations are a random sample from a hypothetical infinite population in which, given the values for change in gross national product, the values for investment are normally distributed, a student *t* test can be used to test the hypothesis that the acceleration coefficient is equal to or greater than one. As would be expected from the size of the coefficient and its standard error, at a .01 level of significance the test statistic falls well within the area in which the hypothesis is rejected.¹⁰ We can safely conclude that in Australia the acceleration coefficient was well below unity over the years under observation.

TABLE II
Real Income and Investment, the United States 1947 to 1957

Billions of 1947 dollars

| <i>Year</i> | <i>Real Gross National Product</i> | <i>Change in G.N.P.</i> | <i>Real Gross Private Domestic Investment</i> |
|-------------|--|---------------------------------|---|
| 1947 | 232.2 | | |
| 1948 | 243.9 | 11.7 | 38.8 |
| 1949 | 241.5 | -2.4 | 28.1 |
| 1950 | 264.7 | 23.2 | 45.3 |
| 1951 | 282.9 | 18.2 | 45.2 |
| 1952 | 293.7 | 10.8 | 39.3 |
| 1953 | 305.3 | 11.6 | 38.5 |
| 1954 | 301.3 | -4.0 | 37.9 |
| 1955 | 322.8 | 21.5 | 46.6 |
| 1956 | 332.0 | 9.2 | 47.6 |
| 1957 | 335.2 | 3.2 | 44.4 |

Sources: Survey of Current Business, July 1957 and February 1958.

The United States Department of Commerce publishes in the *Survey of Current Business* figures for the United States for real gross national product and real gross private domestic investment. These are given in Table II for the years 1947 to 1957. Inspection of Table II will show that any lag between change in gross national product and investment is less than one year, and is thus not discernible in the published figures. The multiple correlation coefficient and the regression equation were again calculated by the least squares method. A value of .92 was obtained for the former, together with the regression equation

$$I_t = 29.52 + \frac{.47}{.10} (Y_t - Y_{t-1}) + \frac{1.24t}{.31}$$

If similar assumptions to those made in the Australian case are made, whether the acceleration coefficient is significantly less than one, and whether the coefficient of "*t*" is significantly different from zero, can be tested using a student *t* test. At the .01 level of significance both the hypotheses that the acceleration coefficient is equal to or greater than one and that the coefficient of "*t*" is zero are rejected. Thus there

10. This means that the probability of getting a value of .61 for the acceleration coefficient is less than .01 if the "true value" is greater than or equal to one.

is again a somewhat surprisingly low value for the acceleration coefficient; but unlike its counterpart in Australia autonomous investment does increase significantly over time. In general in the American case the regression equation is not such a "good fit" as in the Australian case. It "explains" 84 per cent of the variance of investment as against 96 per cent "explained" by that for Australia. Nevertheless, .92 is a sufficiently high value of the correlation coefficient to say that it is at least "possible to make sense of the facts in the light of Professor Hicks' hypotheses".

Apart from the discovery of the degree to which Professor Hicks' hypotheses fit the facts, two conclusions emerge. The first, that unlike its counterparts both in Professor Hicks' model and in the United States, autonomous investment in Australia has not tended to increase with time is the less significant. It could be explained by an unusually high level of autonomous investment in the years 1949 to 1951 due to the almost unprecedented boom in Australia at that time, or even due to backlogs in investment still remaining from the war years. More stress should be placed on the second conclusion, that in both Australia and the United States the value of the acceleration coefficient is closer to one half than to unity, which contradicts the widespread belief among advocates of the acceleration coefficient that one is the lowest plausible value of the coefficient.¹¹ Acceleration effects appear to have been important in the economies examined, but they may be a less destabilizing influence than is believed by supporters of the principle.

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11. See e.g. D. Hamberg, *Economic Growth and Instability* (New York, 1956), p. 45.

SOME STATISTICS OF SECURITY PRICES AND YIELDS IN THE SYDNEY MARKET, 1875-1955¹

The purpose of this article is to present in summary form² some statistics of security prices and yields in the Sydney market for the period 1875-1955. It is believed they may be of use to researchers

1. These statistics are part of the results of an investigation into security prices and yields in the Sydney market which has been carried out with financial assistance from the Sydney Stock Exchange, the Life Offices' Association for Australasia, the Stock Exchange of Melbourne, the Bank of New South Wales and the Commercial Banking Company of Sydney Limited. For other results see D. McL. Lamberton, *Share Price Indices in Australia* (Sydney: Law Book Co. of Australasia Pty. Ltd., 1958) and "Economic Growth and Stock Prices: The Australian Experience", *Jour. Bus. Univ. Chicago*, xxxi, 3 (July, 1958). The statistics now presented for the period 1901-1955 were incorporated in a paper entitled "Some Aspects of Security Prices and Yields in the Sydney Market, 1901-1955" read before the Statistical Society of New South Wales in March, 1957. I should like to acknowledge the assistance of Miss Gwenda Cane, B.Sc., in this investigation and thank the firm of T. J. Thompson and Sons for lending their records.

2. The monthly and quarterly series from which the annual values shown here were computed are available from the author, Department of Economics, University of New England.

working on this period. While long term calculations from economic data, especially those involving the use of index number techniques, only provide somewhat impressionistic results and the securities market to which the data related was, for at least the greater part of the period covered, extremely narrow and of minor importance in aggregate capital formation, these series may be useful to indicate the broad changes in interest rates, local investment experience and the state of business confidence. In view of the growing belief that the role of oversea conditions as the initiating factor in fluctuations in the Australian economy has been unduly emphasized, such series, by virtue of their being computed on a monthly and quarterly basis, may also prove of use in examining the timing of fluctuations.

Share Price Indices

The share price indices are designed as measures of investment experience. A chained value ratio formula has been used and the indices are intended to show what would have happened to an investor's funds if, at the beginning of 1875, he had bought all shares quoted on the Sydney Stock Exchange, allocating his purchases among the individual issues in proportion to their total monetary value, and each month by the same criterion redistributed his holdings among all quoted shares. No allowance has been made for cash dividend payments, brokerage or taxation.³

Price data were drawn from the following sources: *Sydney Morning Herald* financial pages, January 1875-September 1882; T. J. Thompson and Sons' monthly *Stock and Share Reports*, October 1882-December 1903;⁴ Sydney Stock Exchange official sales records, January 1904-June 1936. Details of the capitalization of companies were obtained from the *Sydney Morning Herald* financial pages, the *Australasian Insurance and Banking Record*, the *Australasian Joint Stock Companies' Year Books*, the monthly *Stock and Share Reports* of T. J. Thompson and Sons, *Jobson's Investment Digest*, and the *Investment Service* of the Research & Statistical Bureau of the Sydney Stock Exchange.

The following indices⁵ were computed:

- (i) *Financial*, monthly from January 1875 to June 1936 with base: average of the three years ended June 1939 = 100 (Table III and Graph 1).
- (ii) *Commercial and Industrial*, monthly from January 1875 to June 1936 with base: average of the three years ended June 1939 = 100 (Table III and Graph 1).
- (iii) *Mining*, monthly from January 1875 to December 1910 with base: average of the year ended June 1898 = 100 (Table III and Graph 1).

3. See Alfred Cowles and Associates, *Common-Stock Indexes* (Bloomington: Principia Press, 1939), pp. 17-24, and D. McL. Lamberton, *op. cit.*, pp. 45-47, for a fuller account of the methods employed.

4. Gaps in this source in August, September, November and December, 1889, January and June, 1890, and March, 1897, were filled using the tables published in the *Australasian Insurance and Banking Record*.

5. The Financial index is comparable with the Banking, Insurance and Trustee group index and the Commercial and Industrial index with the All Ordinary Shares (excluding financial) index published in *Share Price Indices in Australia*, Appendix 1, and currently computed on a daily basis by the Research & Statistical Bureau of the Sydney Stock Exchange.

TABLE I
Shares included in Price Indices

| Year | Financial Index | | | Commercial and Industrial Index | | | Mining Index | | |
|------|-----------------|---|--------------------------|---------------------------------|---|--------------------------|-----------------|---|--------------------------|
| | Number included | Number surviving from previous five year period | Number surviving to 1935 | Number included | Number surviving from previous five year period | Number surviving to 1935 | Number included | Number surviving from previous five year period | Number surviving to 1910 |
| 1875 | 8 | — | 3 | 5 | — | 1 | 5 | — | — |
| 1880 | 9 | 8 | 3 | 5 | 5 | 1 | 4 | 3 | — |
| 1885 | 7 | 5 | 3 | 5 | 5 | 1 | 4 | 2 | — |
| 1890 | 8 | 6 | 5 | 6 | 4 | 2 | 10 | 3 | 6 |
| 1895 | 8 | 8 | 5 | 10 | 7 | 4 | 11 | 9 | 8 |
| 1900 | 7 | 7 | 5 | 12 | 12 | 5 | 18 | 11 | 11 |
| 1905 | 7 | 7 | 5 | 12 | 10 | 6 | 20 | 15 | 13 |
| 1910 | 10 | 7 | 8 | 21 | 12 | 11 | 14 | 12 | 14 |
| 1915 | 10 | 9 | 9 | 21 | 21 | 11 | | | |
| 1920 | 9 | 9 | 9 | 20 | 20 | 11 | | | |
| 1925 | 9 | 9 | 9 | 40 | 11 | 39 | | | |
| 1930 | 10 | 9 | 10 | 45 | 39 | 45 | | | |
| 1935 | 10 | 10 | 10 | 47 | 45 | 47 | | | |

The number of shares included grew from 7 in the Financial group, 5 in the Commercial and Industrial group and 5 in the Mining group in 1875 to 8, 10, and 21 in 1901. By 1936 the Financial group comprised 11 shares and the Commercial and Industrial group 47 shares. However, as shown in Table I, new shares were added and old ones were deleted. The changing composition of the Commercial and Industrial list becomes most noticeable in the early 'twenties when of 40 shares included in 1925 only 11 had survived from 1920.⁶

Monthly high and low prices were recorded for all shares traded and this list constituted the population for sampling purposes. The sample used then comprised all shares which had sold each month for any three years between 1875 and 1936. Resources were inadequate for dealing with the large number of shares which remained in the sample during the 1920's so further limitation was necessary. This limitation was carried out in random fashion while attempting to give representation according to size, type of enterprise and capital structure. Allowance made for the relationship between ordinary capital and preference and debenture capital partly took account of the debtor-creditor position of the companies.⁷ The fact that low-priced shares show greater fluctuations in price than high-priced shares⁸ was also taken

6. In view of the nature of the indices the changing composition of the shares included should be considered, strictly speaking, in terms of total market value rather than number of issues.

7. Cf. R. A. Kessel, "Inflation-Caused Wealth Redistribution: A Test of a Hypothesis", *American Economic Review*, XLVI, 1 (March 1956).

8. Cf. Z. Szatrowski, "The Relationship between Price Changes and the Price Level for Common Stocks", *Journal of the American Statistical Association*, 40 (1945).

into account. When all this had been done there remained the problem that shares which had traded continuously for a three-year period were not average stock exchange securities—the average premium on shares included was considerably higher than that on shares excluded. So that some upward bias was introduced. Especially is this true of the mining index. Of more than 600 mining shares traded between 1875 and 1910 only a few had a market “life” of three years; in many cases the “life” was less than a year and frequently as short as three months.

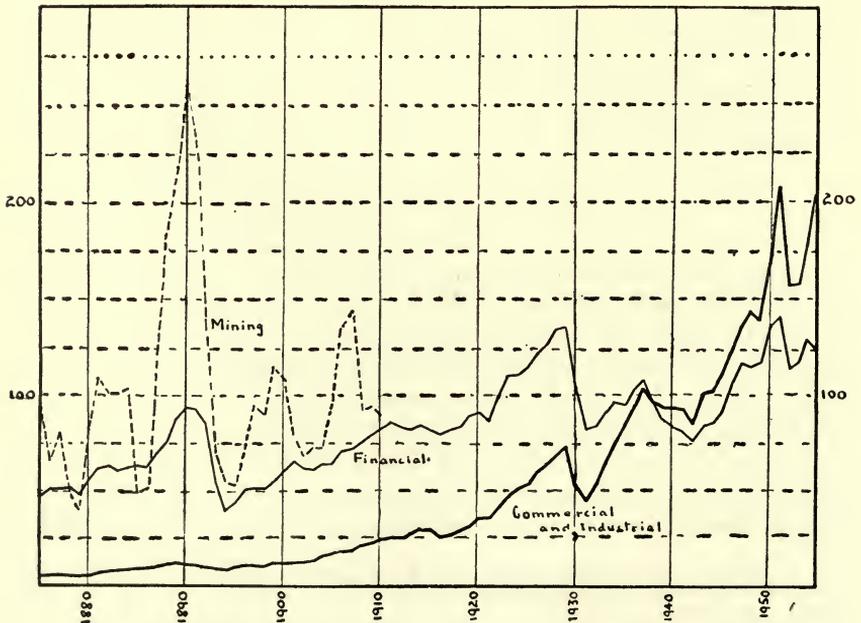
Although inter-company shareholdings were extensive and lead to duplication of weights, no adjustments were made. Oversea investment in Australian companies was not eliminated from the number of shares for the value product calculation. Where specific rights to issues of other classes of shares or to issues of shares by associated companies were given and traded adjustments were made according to the realized value of the rights.

Ordinary Share Yield

The share yield shown in Table III and Graph 2 represents the arithmetic mean of the yields of all shares for which data were avail-

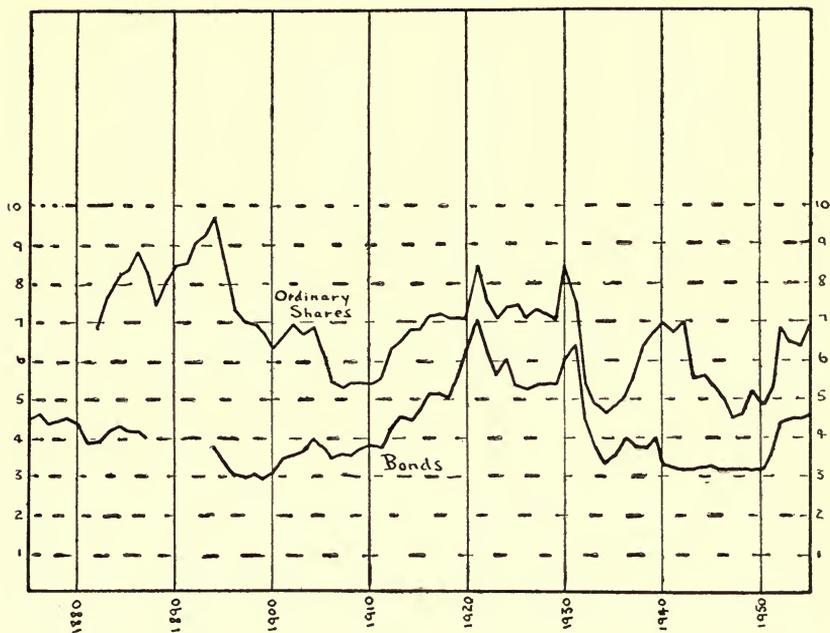
GRAPH 1

Share Price Indices



Base: Average of three years ended June, 1939 = 100 except for mining where average of year ended June, 1898 = 100.
Sources: January, 1875, to June, 1936, Table 3; July, 1936, to December, 1955, D. McL. Lamberton, *op. cit.*, Appendix 1.

GRAPH 2
Security Yields



Yield on ordinary shares is the average of quarterly yields while that on bonds is the average of monthly yields.
Sources: Ordinary shares, Table 3; Bonds, January, 1875, to December, 1925, Table 3; January, 1926, to December, 1955, Commonwealth Bank of Australia.

able in the last month of each quarter. The computations relate to the end of the month, except from 1914 to 1936 where they are mid-month values. The yield on individual shares was computed by expressing the dividend paid, or indicated, as a percentage of the price. Because of the difficulty of establishing what that dividend was considered to be at any time in the past the yield computations in the *Stock and Share Reports*⁹ of T. J. Thompson and Sons and the *Official Gazette* of the Sydney Stock Exchange were used as a guide. As the *Stock and Share Reports* were available only from October, 1882, no attempt was made to compute yields for earlier months.

Dividend Rates

The dividend rate computations in Table II were confined to the period for which share yields were available but were not brought beyond 1900. They represent the weighted arithmetic mean of the end

9. Gaps in this source in September and December, 1889, June, 1890, and March, 1897, were filled using the tables published in the *Australasian Insurance and Banking Record*.

TABLE II
*Mean Annual Dividend Rates of Companies
 Listed on the Sydney Stock Exchange*

| | | | | | |
|------|----------|------|------|----------|------|
| 1882 | .. . . . | 12.2 | 1892 | .. . . . | 11.6 |
| 1883 | .. . . . | 14.5 | 1893 | .. . . . | 9.1 |
| 1884 | .. . . . | 14.6 | 1894 | .. . . . | 7.1 |
| 1885 | .. . . . | 14.0 | 1895 | .. . . . | 7.1 |
| 1886 | .. . . . | 13.0 | 1896 | .. . . . | 7.0 |
| 1887 | .. . . . | 14.8 | 1897 | .. . . . | 7.6 |
| 1888 | .. . . . | 13.5 | 1898 | .. . . . | 7.7 |
| 1889 | .. . . . | 13.5 | 1899 | .. . . . | 8.1 |
| 1890 | .. . . . | 13.0 | 1900 | .. . . . | 9.2 |
| 1891 | .. . . . | 12.4 | | | |

of year ordinary dividend rates of companies listed on the Sydney Stock Exchange. The weights employed were the issued ordinary capitals of the companies.

Bond Yield

The bond yield shown in Table III and Graph 2 was computed on the basis of sales deemed to have taken place at mid-month at a price equal to the mean of the high and low prices for the month adjusted for accrued interest and brokerage charges using the Financial Publishing Company's *Comprehensive Bond Values*. Price data, obtained from the same sources as the data for the share price indices,¹⁰ were as follows:

- 1875-1887: New South Wales Government Terminable 1874-1902 bearing interest at 5 per cent per annum payable 1st January and 1st July;
- 1894-1900: New South Wales Government Funded Stock 1912 Option bearing interest at 4 per cent per annum payable 10th February and 10th August;
- 1901-1925: All New South Wales and Commonwealth Government issues maturing in more than six months for which price data were available. The yield shown is the unweighted arithmetic mean.

Although few sale prices were recorded after October, 1886, market activity did not come to as sudden an end as the yield series suggests. The *Stock and Share Reports* indicated sales without prices being recorded in November, 1886, and February, April and June, 1887. Buyers were present in July, August, September and October, 1887, throughout 1888, and from January to July and again in October, 1889. From April, 1893, until early in 1894, 4 per cent Funded Stock was on sale free of charges at all brokers. In November, 1896, 3 per cent Funded Stock was made available on similar terms.

The bond yield shown here differs statistically from both the short and long yields computed by the Commonwealth Bank of Australia for the period after 1925. However, overlapping computations for 1926 indicated fairly close agreement with the Bank's long yield.

10. Gaps filled as indicated in (4) above.

TABLE III

Security Prices and Yields in the Sydney Market 1875-1955

(Annual Averages)

| Year | Share Prices | | | Yields | | Year | Share Prices | | | Yields | |
|------|--------------|---------------------------|--------|-----------------|-------|------|--------------|---------------------------|-----------------|--------|--|
| | Financial | Commercial and Industrial | Mining | Ordinary Shares | Bonds | | Financial | Commercial and Industrial | Ordinary Shares | Bonds | |
| 1875 | 48.40 | 6.95 | 93.25 | | 4.51 | 1916 | 79.32 | 27.35 | 7.16 | 5.16 | |
| 1876 | 50.66 | 6.99 | 65.90 | | 4.65 | 1917 | 81.32 | 27.75 | 7.19 | 5.18 | |
| 1877 | 51.69 | 7.33 | 81.47 | | 4.38 | 1918 | 83.60 | 29.53 | 7.07 | 5.07 | |
| 1878 | 51.83 | 7.09 | 50.96 | | 4.44 | 1919 | 88.01 | 31.57 | 7.09 | 5.60 | |
| 1879 | 48.83 | 6.08 | 40.16 | | 4.51 | 1920 | 90.88 | 35.44 | 7.07 | 6.28 | |
| 1880 | 55.66 | 6.72 | 82.90 | | 4.36 | 1921 | 86.54 | 36.32 | 8.39 | 7.05 | |
| 1881 | 63.56 | 7.93 | 109.86 | | 3.88 | 1922 | 99.58 | 41.09 | 7.42 | 6.17 | |
| 1882 | 64.08 | 8.42 | 101.51 | 6.83 | 3.88 | 1923 | 110.26 | 47.69 | 7.03 | 5.60 | |
| 1883 | 61.33 | 9.48 | 101.22 | 7.64 | 4.15 | 1924 | 110.02 | 50.20 | 7.37 | 5.97 | |
| 1884 | 63.42 | 10.11 | 103.74 | 8.14 | 4.26 | 1925 | 114.52 | 53.78 | 7.40 | 5.33 | |
| 1885 | 64.37 | 10.24 | 49.16 | 8.30 | 4.20 | 1926 | 121.50 | 59.79 | 7.08 | | |
| 1886 | 63.74 | 10.38 | 51.68 | 8.78 | 4.18 | 1927 | 126.55 | 64.37 | 7.27 | | |
| 1887 | 69.94 | 11.22 | 125.44 | 8.24 | 4.05 | 1928 | 134.84 | 69.95 | 7.20 | | |
| 1888 | 76.77 | 13.41 | 184.38 | 7.36 | — | 1929 | 135.45 | 74.03 | 7.02 | | |
| 1889 | 88.60 | 14.35 | 217.79 | 8.01 | — | 1930 | 101.55 | 51.49 | 8.38 | | |
| 1890 | 94.79 | 13.02 | 262.12 | 8.45 | — | 1931 | 82.17 | 43.93 | 7.52 | | |
| 1891 | 93.38 | 12.16 | 227.99 | 8.45 | — | 1932 | 83.65 | 52.55 | 5.38 | | |
| 1892 | 85.75 | 11.15 | 129.73 | 9.06 | — | 1933 | 90.05 | 64.54 | 4.86 | | |
| 1893 | 54.24 | 10.23 | 68.98 | 9.25 | — | 1934 | 96.05 | 75.35 | 4.77 | | |
| 1894 | 39.29 | 9.98 | 55.07 | 9.71 | 3.75 | 1935 | 94.79 | 84.92 | 4.77 | | |
| 1895 | 44.92 | 10.56 | 52.50 | 8.62 | 3.34 | 1936 | 103.53 | 93.78 | 5.03 | | |
| 1896 | 52.20 | 11.78 | 75.00 | 7.28 | 3.08 | 1937 | | | 5.55 | | |
| 1897 | 52.95 | 11.23 | 94.81 | 6.91 | 3.03 | 1938 | | | 6.38 | | |
| 1898 | 52.46 | 11.64 | 89.09 | 6.87 | 3.10 | 1939 | | | 6.72 | | |
| 1899 | 55.75 | 12.81 | 114.71 | 6.69 | 3.04 | 1940 | | | 6.91 | | |
| 1900 | 61.62 | 13.57 | 109.98 | 6.32 | 3.16 | 1941 | | | 6.70 | | |
| 1901 | 66.64 | 13.51 | 78.74 | 6.68 | 3.47 | 1942 | | | 6.95 | | |
| 1902 | 61.98 | 13.58 | 65.83 | 6.88 | 3.59 | 1943 | | | 5.52 | | |
| 1903 | 61.98 | 14.81 | 71.44 | 6.67 | 3.69 | 1944 | | | 5.60 | | |
| 1904 | 63.79 | 16.60 | 71.42 | 6.84 | 3.97 | 1945 | | | 5.33 | | |
| 1905 | 64.43 | 17.84 | 93.57 | 6.18 | 3.76 | 1946 | | | 4.97 | | |
| 1906 | 71.10 | 19.12 | 134.25 | 5.47 | 3.46 | 1947 | | | 4.52 | | |
| 1907 | 73.24 | 19.77 | 144.45 | 5.26 | 3.54 | 1948 | | | 4.66 | | |
| 1908 | 75.38 | 22.00 | 91.31 | 5.46 | 3.59 | 1949 | | | 5.20 | | |
| 1909 | 79.76 | 24.19 | 94.24 | 5.47 | 3.72 | 1950 | | | 4.86 | | |
| 1910 | 84.21 | 25.24 | 88.15 | 5.38 | 3.78 | 1951 | | | 5.29 | | |
| 1911 | 85.26 | 26.69 | | 5.58 | 3.74 | 1952 | | | 6.81 | | |
| 1912 | 83.87 | 27.03 | | 6.33 | 4.24 | 1953 | | | 6.45 | | |
| 1913 | 82.06 | 28.22 | | 6.53 | 4.56 | 1954 | | | 6.37 | | |
| 1914 | 84.78 | 31.03 | | 6.76 | 4.38 | 1955 | | | 6.94 | | |
| 1915 | 82.35 | 30.50 | | 6.80 | 4.75 | | | | | | |

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THE RELATIONSHIP BETWEEN SIZE OF
FAMILIES AND INCOMES IN NEW ZEALAND
1949-50 TO 1953-54

I

There is a general presumption that the poor have more children than the rich.¹ Studies have, however, been made in U.S.A., Canada and Sweden which tend to indicate that fertility decreases with increasing incomes up to a certain income level only, after which it tends to increase again.² It appears that this trend applies to New Zealand as well.

New Zealand income tax statistics show tables which relate numbers of income tax assessments to income groups and the number of children under sixteen in the family of taxpayers. The restriction to children under sixteen may slightly bias the results in favour of the higher income groups if the trend towards larger families in these groups was only of fairly recent origin. However, this limitation on our figures does not seriously vitiate the results. Independent evidence which takes into account all children tends to confirm the findings from income tax figures. It must also be pointed out that income taxation during the years under review covered the vast majority of all income earners and that only an insignificant number of persons with children was exempt from making an income tax return.³

The following table shows persons returning incomes with four, and with five and more children, as a percentage of persons with one or more children. Persons without children have been ignored.

TABLE I

Persons with Four, and with Five and More Children, as percentage of all tax returns of Persons with One or More Children, 1949-50 to 1953-54

| Income Group | 4 Children | | | | | 5 + Children | | | | |
|--------------------|-----------------------|------|------|------|------|--------------|------|------|------|------|
| | Year ended 31st March | | | | | | | | | |
| | 1950 | 1951 | 1952 | 1953 | 1954 | 1950 | 1951 | 1952 | 1953 | 1954 |
| £NZ | | | | | | | | | | |
| 200-400 | 7.6 | 7.2 | 7.5 | 5.5 | 9.9 | 7.7 | 9.9 | 8.7 | 11.4 | 8.9 |
| 400-600 | 7.2 | 7.3 | 7.5 | 8.0 | 8.3 | 5.5 | 6.4 | 7.8 | 9.0 | 9.6 |
| 600-800 | 8.9 | 8.4 | 8.8 | 8.5 | 8.5 | 5.4 | 5.4 | 5.9 | 6.4 | 6.7 |
| 800-1000 | 8.8 | 8.9 | 8.5 | 8.8 | 8.8 | 5.6 | 5.0 | 6.1 | 6.5 | 6.1 |
| 1000-2000 | 9.1 | 9.1 | 9.9 | 10.4 | 11.3 | 6.5 | 6.3 | 6.1 | 6.2 | 6.5 |
| 2000-3000 | 13.0 | 9.5 | 13.2 | 11.3 | 10.3 | 5.0 | 8.1 | 7.8 | 7.5 | 8.1 |
| 3000-4000 | 11.4 | 11.1 | 11.1 | 12.6 | 9.5 | 5.5 | 7.1 | 5.9 | 6.9 | 7.0 |
| 4000 + | 12.4 | 11.3 | 12.3 | 12.8 | 13.4 | 7.1 | 5.9 | 5.8 | 6.3 | 6.0 |

Sources: *Report on the Income and Income Tax Statistics of New Zealand*, Department of Statistics, Wellington.

1. See United Nations Department of Social Affairs, *The Determinants and Consequences of Population Trends*, pp. 80 and 86.

2. *Ibid.*, p. 87, footnote 153.

3. Persons in receipt of incomes exceeding £300 and all persons engaged in any trade irrespective of the amount of income earned are required to furnish returns.

If we take the larger families first (five or more children) we find that there is a general tendency for the percentage of families to fall as income rises until the £800-£1,000 bracket is reached. This is quite in line with what one would expect. The £200 to £400 group has the largest percentage of families with five or more children. Included in this group are probably a fair number of Maori families who have very large numbers of children. The general assumption holds here that very low incomes and lack of foresight in terms of family planning go hand in hand. As income rises and we reach the salaried and lower professional classes the size of family falls.

But when we pass the £1,000 mark the size of families rises again. In two years out of five the £2,000 to £3,000 group, a really "high income" class, stands second only to the £200-£400 "near-pauper" group. And the £3,000 to £4,000 group, although lower than the £2,000-£3,000, shows figures in three out of five years which exceed the £600-£2,000 percentages.

When we come to the family of four we find in two years out of five a steady progression: that is, the higher the income the more families in that group have four children. In all but two cases, the £4,000 + income receivers have the largest proportion of four children families.

The importance of the trend towards larger families in the higher income groups can be seen from the fact that in 1953-54 twenty-nine per cent of all children under sixteen (149,751 out of 515,331) came of families with incomes exceeding £1,000 p.a. This compares with only 17.1 per cent of all tax assessments and 24.1 per cent of all tax assessments on persons with children, being on incomes over £1,000.

There is no reason to assume that the fact of not having included taxpayers without children in our comparisons leads to an overstatement of large families in the higher income groups. There are more people without children in the lower income groups, but it is impossible from the statistics to separate out those who are married without children and those who are unmarried. Table II shows the percentage of tax assessments for people without children in the various income groups.

TABLE II
*Tax Assessments on Persons Without
Children in 1954*

| <i>Income Group</i> | Percentage of All Tax Assessments | <i>Percentage</i> |
|---------------------|-----------------------------------|-------------------|
| £NZ | | |
| 200-400 | | 92.5 |
| 400-600 | | 79.3 |
| 600-800 | | 54.1 |
| 800-1000 | | 42.7 |
| 1000-2000 | | 44.2 |
| 2000-3000 | | 48.1 |
| 3000-4000 | | 46.2 |
| 4000 + | | 53.0 |

The results of our figures from income tax statistics are corroborated by an independent inquiry which was made by the New Zealand Department of Health in 1952.⁴ Infants were divided into three groups according to the occupation of their fathers. The groups of occupations fell roughly into the following categories: Social Group I—Unskilled workers; Social Group II—Those not in Groups I or III; Social Group III—Employers and professional people.

Table III shows the number of children in the different groups that were first-born, those that were the second child and those that were the third or subsequent child. All figures refer to the last two quarters of 1952.

TABLE III
Births by Order in Certain Social Groups
(Last two quarters 1952)

| Social Group | % of Births at Different Parities 3rd and | | | | All Births |
|---------------|--|-----------|------------------|--|------------|
| | 1st Child | 2nd Child | Subsequent Child | | |
| I | 30.5 | 27.2 | 42.3 | | 2,705 |
| II | 31.5 | 33.1 | 35.4 | | 12,124 |
| III | 26.4 | 27.0 | 46.6 | | 7,487 |

Source: *Report on the Medical Statistics of New Zealand, 1952, Table X.*

The Report from which the above table is taken comments: "It is noteworthy that the percentage of third and later children in a family is greater than average in both Group I and Group III. It is substantially higher in Group III than in Group I. This may be in part accounted for by the slightly higher average age of persons in Group III. There is no doubt, however, that the restriction on large families that is seen in other countries in occupational groups of the type found in Group III is not met with here. The most 'restrained' section in New Zealand is the middle group."

II

Two points may be mentioned to account partially for the trend which we have shown to exist in Part I.

It is well known that occupation and family size are strongly correlated. This applies in particular to the difference between urban and rural occupations, the rural birth rate being usually higher than the urban.⁵ New Zealand is no exception. In 1956, for instance, the urban birth rate in New Zealand was below the average birth rate for Europeans—23.02 compared with 24.67 per 1,000 of mean population for the whole of New Zealand.⁶ This means that the European birth rate in rural areas must be above average.

4. See *Report on the Medical Statistics of New Zealand, 1952*, compiled by the Department of Health, Wellington, p. x.

5. United Nations, *op. cit.*, p. 85.

6. See *Monthly Abstract of Statistics*, Tables 3 and 5.

On the other hand, farmers have very high incomes in New Zealand and, in fact, constitute the majority of income receivers in the highest groups. Table IV shows the percentage of farmers in various income groups:

TABLE IV
*Percentage of Farmers in Income Groups
1949-50 and 1953-54*

| Income Group | % of Farmers in | |
|---------------------|-----------------|---------|
| | 1949-50 | 1953-54 |
| £NZ | | |
| 200-400 | 5.2 | 5.3 |
| 400-600 | 5.6 | 4.9 |
| 600-800 | 14.0 | 4.5 |
| 800-1000 | 28.4 | 9.1 |
| 1000-2000 | 45.4 | 32.5 |
| 2000-3000 | 54.4 | 52.1 |
| 3000-4000 | | 54.1 |
| 4000 + | | 58.1 |

Source: *Reports on the Income and Income Tax Statistics of New Zealand.*

The prevalence of farmers amongst the rich in New Zealand may account partly for the trend towards large families in the higher income brackets.

The second point which may be worth mentioning is a general social one. The whole social atmosphere in New Zealand is favourable to family life. Family allowances, free education, free medical services and the possibility for children to grow up in an uncrowded environment where there is scope for development—personal and economic—tend to make family life desirable, not to mention cultural factors like the spread of doctrines of “natural child birth” and emphasis on the emotional satisfaction obtained by having and rearing children.

In such an environment economic considerations may well enter into the determination of family size in a highly conscious manner. Income receivers below £1,000 feel that a large family cannot be sustained properly, especially if the wife works in order to make up a reasonable income, whereas the higher income groups are able to enjoy one of the advantages of life which consists, in the existing ethos, in having a large family.

Obviously such statements can be made only very tentatively and it is hardly the economist’s job to substantiate them. Nevertheless, personal observation as well as general considerations tend to lead towards some such conclusion.

III

If there is substance in the considerations put forward in Part II two interesting conclusions emerge:

Size of family is determined by occupational structure as much as by income structure. Thus, if farmers become high income earners the

birth rate will remain high. On the other hand, if farmers leave the land, the birth rate will fall. In terms of general population theory this might mean that the hope for a reduction in birth rates in underdeveloped countries will have to be centred on occupational changes as much as on income changes. If the number of people dwelling on the land can be reduced, birth rates may fall, even if incomes do not rise spectacularly. Thus industrialisation of backward countries will tend to solve several problems simultaneously.

Another, even more hopeful conclusion for the future of mankind can also be drawn. If with advancing civilization a close correlation between economic and social prospects for large families and the actual size of families can be established—as seems to be the case in New Zealand, the spectre of over-population to the point of “no standing-space” seems to be banned. In other words, it is possible to hope that, with the growth of civilized living, parents will adjust their families to the economic environment in which the children will have to live. An even proportional development of productive forces and population will then ensue which would eliminate any contradictions between population growth and real income.

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ECONOMIC PRINCIPLES OF TRANSPORT REGULATION

Mr. R. R. Hirst, in his recent article, “Interstate Road Transport”,¹ discussed the principles which should be adopted by a regulatory authority to ensure economic division of traffic between existing transport agencies. He stated that: “Efficiency will be achieved when the traffic arising from the existing pattern of industry is divided between the sectors of the transport industry so that aggregate costs to society . . . are lower than for any other distribution” (p. 276).

From this he argued that: “If the competing transport agencies calculate their charges by applying different percentage mark-ups on prime costs an economic division of traffic should develop between the competing sectors of the transport industry, providing the charges have the same ordering as the long run marginal social costs on which they are based. Thus the practice of differential freight rates is compatible with an economic division of traffic, providing the charge of a low cost producer for a particular unit of traffic does not exceed a less efficient competitor’s charge for that traffic” (p. 277).

The validity of the argument is not questioned, but it is necessary to point out that it is valid only if division of *existing* traffic is the sole object of transport regulation. There are, however, other economic implications which should receive attention. The most important of these is the effect of transport rates on location of transport users, and it will be shown that differential freight rates may lead to a distortion of the

1. *Economic Record*, November 1956.

location pattern. Furthermore, the distorting effects of differential freight rates are not confined to location, but extend to any other factor or factors which, like location, may be substituted for, or are substitutable with, transport.

So far as location is concerned, a simple example will make the point. Differential freight rates mean, presumably "... differences in rates which are not explainable by cost considerations".² To avoid discussion of variations in cost, we may borrow Mr. Hirst's assumption of a homogeneous distance input or transport unit, a ton-mile. Assume that there are two possible locations for a new factory, identical in all respects other than transport. Location *A* is 60 miles from the raw material and market centre; location *B* 45 miles from the same centre. If we assume that rail transport is the lowest cost medium for both locations, but that competition for traffic is such that its charge for servicing location *A* is less than the charge for location *B*, it follows that the prospective manufacturer will settle at *A*. The rail charge is still below that for road transport, yet the differential pricing procedure has resulted in wasting the economy's scarce transport resources. Thus any pricing procedure which results in a charge which does not represent the marginal social cost of the resources necessary to make the service possible cannot lead to a rational resource pattern.³

So far reference has been made only to location, but it is clear that the argument can be extended to any factor of production which is substitutable at the margin for transport factors. This has been stated very clearly by W. Isard:⁴ "When in a simple economy a farmer with a given amount of capital and other resources chooses to apply his efforts to cultivating new land on the periphery of the hinterland of a growing town rather than at cultivating intensively a more limited quantity of old land near the town, in general he anticipates reaping greater returns despite the fact that he applies less of his available labour to cultivation and more to marketing his harvest. In effect he substitutes distance inputs (indirect labour inputs) for direct labour inputs. He finds it profitable to do so in the same way that in using a plough that he has built, he finds it profitable to substitute services of capital goods (indirect labour inputs) for direct labour inputs".

Since the transport user decides on the combination of direct and indirect labour inputs on the basis of their respective prices, any deviation from long run marginal social cost pricing will have distorting effects.

2. D. H. Wallace: "Joint and Overhead Cost and Railway Rate Policy", *Quarterly Journal of Economics*, August 1934, p. 584.

3. See: R. L. Dewey: "Criteria for the Establishment of an Optimum Transportation System", *American Economic Association, Papers and Proceedings*, May 1952, esp. p. 649. Prof. A. G. Pool: "The basis of Transport Charges", *Journal of the Institute of Transport*, Jan. 1955, pp. 45/48. Prof. G. Walker: "New Thinking in Transport", *ibid.*, July 1955, pp. 159-65.

4. "Distance Inputs and the Space Economy, Part 1: The Conceptual Framework", *Quarterly Journal of Economics*, May 1951, pp. 190-1. See also more comprehensive discussion by the same author in: *Location and Space Economy* (Massachusetts Institute of Technology and John Wiley & Sons, Inc., N.Y., 1956) esp. Chapt. 9.

Where the price of the transport service is below long run marginal social cost the transport user will, so far as he is able, substitute transport factors for other factors at the margin; and where the price is above long run marginal social cost he will substitute other factors for transport factors. In other words, so long as the price of the transport service deviates from long run marginal social cost, he will tend to use more or less respectively of the economy's scarce transport resources than considerations of economic efficiency would require.

It is true, of course, that the transport users already mislocated as a result of the existing pattern of transport charges will be adversely affected by the adoption of any optimum pattern. It is doubtful, however, whether this is sufficient argument for the continuation of a practice which will ensure its perpetuation. Rational decisions on location and factor use can only be made if they are based on transport charges which reflect as accurately as may be possible the (cost of) resources used up in providing the service.

One other short comment on Mr. Hirst's paper. He says that: "As a road is a more elaborate structure than a rail track it would be reasonable, *a priori*, to expect the track costs of road vehicles to exceed that of rail" (p. 283).

There is no *a priori* reason why this should be so, since total track costs depend not only on initial construction costs, but also on maintenance costs and the intensity of use. The intensity of use is important because neither rail track nor road maintenance costs are a linear function of the intensity of use since rail tracks and roads deteriorate through exposure to the elements whether they are used intensively or not. Both rail track and road maintenance costs tend to decline per unit of traffic as the permanent way or road is used more intensively.⁵ It is therefore not sufficient to refer only to construction costs, unless it is specifically assumed that intensity of use is the same for both types of route facilities and that there is no significant difference in maintenance costs. Neither assumption is likely to prove very realistic.

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5. See: Raymond, Riggs, Sadler: *Elements of Railroad Engineering* (John Wiley & Sons Inc., N.Y., 1947), Part 2, esp. p. 122. A. A. Walters: "Track Costs and Motor Taxation", *Journal of Industrial Economics*, Vol. 2, No. 2 (April 1954). H. Kolsen: "How to Pay for the Roads", *Australian Quarterly*, June 1957. *Report of Committee of Transport Economic Research Relating to Road and Rail Transport, Part I: Road Transport Costs and Road Construction and Maintenance* (Australian Transport Advisory Council, Melbourne, 1956), p. 58.

THOSE ELEMENTARY THEOREMS IN THE PURE THEORY OF PRICE

In his note on the above subject,¹ H. D. Pridmore rather slides over the problem of explaining the equality of marginal and average products at the average product's maximum: e.g. ". . . the fact that the average product is unchanged by the addition of a unit of labour is often expressed by saying that the average product is a maximum"² hardly convinces the majority of students. It omits the essential "why". Why, for example, does a monetary constancy of average product mean that average product is at its maximum whereas a momentary constancy of average cost means that average cost is at its minimum? This is a serious question for the student whose mathematics are not of a sufficient standard to appreciate the similarity of the conditions for maxima and minima. For these students, an approach which does not lay such emphasis on momentary constancy of average product (average cost) at its maximum (minimum) would seem to be indicated.

I have attempted such an approach below, and it seems as though it might have the added advantage of reconciling students to the disconcerting fact that schedules of marginal and average products (costs), drawn up without any special "cooking", more often than not do not give the required equalities at the maxima (minima) of the average data.

- r = quantity of factor of production (output)³
 a_r = average product (average cost)
 m_r = marginal product (marginal cost) associated with quantities r and $r + 1$ of the factor (output).

The following relationship (which corresponds to Pridmore's equation (3)) is implicit in these definitions:

$$a_{r+1} = \frac{r \cdot a_r + m_r}{(r+1)}$$

whence:
$$\frac{a_{r+1}}{a_r} = \left(\frac{r \cdot a_r + m_r}{(r+1)} \right) \left(\frac{1}{a_r} \right)$$

$$= \frac{r + \frac{m_r}{a_r}}{r+1}$$

From this it is clear that if $\frac{a_{r+1}}{a_r} \geq 1$, then $\frac{m_r}{a_r} \geq 1$, and *vice versa*.

These are Pridmore's propositions 2, 3 and 4, and their converses. In addition, they enable one to say something about the relation between average and marginal values when the average values change at various rates.

1. This Journal, Aug. 1957, pp. 265-7.

2. *Ibid.*, p. 267.

3. The same symbols are used for product and for cost, with the definitions for the latter being given as bracketed alternatives.

For the moment confining attention to the case of marginal and average product, one might visualize the usual, idealized, average product curve as a sort of inverted parabola. It is fairly obvious that average product rises at a decreasing rate, reaches a maximum at which it ceases rising and commences to fall, and then falls at a progressively increasing rate. In terms of the above expressions, $\frac{a_r + 1}{a_r}$ starts above one and falls progressively until it is below one. $\frac{m_r}{a_r}$ does exactly the same, which means that marginal product starts above average product, converges on it, becomes equal to it, and eventually falls below it. The point of equality between marginal and average product, $\frac{m_r}{a_r} = 1$, corresponds to the point at which average product has ceased rising and is about to fall, $\frac{a_r + 1}{a_r} = 1$.

The same procedure could be followed for average and marginal costs, with the obvious difference, of course, that the idealized average cost curve is similar to an ordinary, upright, parabola. In this case, of course, one is dealing with a minimum for average cost, as opposed to the previous maximum for average product.

It might be pointed out that, in a schedule where discrete units are used, the same process occurs, namely that $\frac{a_r + 1}{a_r}$ progresses from one side of unity to the other. However, the schedule may not contain any data which would make this expression exactly unity. This does not invalidate the general proposition, that marginal and average values are equal at either the maximum or minimum of the average value, because this proposition is strictly true only for continuous data. However, in practice, provided that the unit of measurement is small relative to the total to be measured (whether factors of production or output) the deviation from equality will be so slight as hardly to matter.

C. S. SOPER

University of Cape Town.

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NEWS AND NOTES

Sir Lennon Raws, Honorary Life Member of the Economic Society of Australia and New Zealand, died in Melbourne on 19 April, 1958. Professor Sir Douglas Copland writes:

Sir Lennon Raws, Colonel W. L. Raws when I first met him in the early days of developing the Schools of Economics and Commerce at the University of Melbourne, played an important part in promoting economic study, in developing the interest of the business world in employing university graduates, and in the founding and fostering of the Economic Society of Australia and New Zealand. In all this work he was one of the pioneers from the business world of Melbourne, and therefore an ally of no mean stature to those of us in the academic world who sought to chart a new course. He had in an unusual degree a combination of the qualities of a genuine interest in and knowledge of the contribution to be made to business by those equipped with a broader academic training, and a recognition of the significance of the study of the economy as a whole in enunciating public policy.

With this background he contributed much in the early days of the School of Commerce in the University of Melbourne, where he was a member of the Faculty as well as of the University Council, and chairman of its Finance Committee. For me he was a wise counsellor and valued friend over many years. He made my task of establishing good and effective relations with the commercial world so much the easier and more rewarding. This he did in his own right as a man of discerning intellect as well as Australian Head of Imperial Chemical Industries. When the Economic Society of Australia and New Zealand was established in 1924 he gave active support to a new venture that was to prosper and contribute much to a wider understanding of the working of the Australian economy in expansion and depression alike. He was a foundation member of the Editorial Board of the *Economic Record* for its first issue in November 1925, and remained a member until his death in 1958. To those of us who participated in the promotion of economic study and research in Australia, Sir Lennon Raws will be gratefully remembered as one of the principal pioneers from the non-academic world in a venture that might have faltered but for the support that he and others with their wider interests from the world of commerce could so effectively give.

The Business Archives Council of Australia (Victorian Branch) in conjunction with the Department of Economic History of the University of Melbourne, is arranging a conference on "Australian Business History" at the University of Melbourne, October 24-25, 1958. Sessions will be chaired and papers given by: Professor Sir Douglas Copland, Professor Sir Alexander Fitzgerald, Messrs. H. L. White, I. McLaren, S. M. Gilmour, Dr. J. Ginswick, Dr. W. A. Sinclair, Professor H. Burton, Professor W. Woodruff, Messrs. G. M. Blainey, N. R. Wills, and Dr. A. Birch.

During the conference a collection of Australian business records

will be on display. It is hoped that representatives of both the business world and the universities will attend. Inquiries are invited to Professor W. Woodruff, Department of Economic History, University of Melbourne.

The first R. C. Mills Memorial Lecture was given, before an audience of some 700, in the Great Hall of the University of Sydney on 29th April. The speaker was Dr. Coombs, and his subject "The Conditions of Monetary Policy in Australia". With the lecture there has been published a memoir, bibliography and portrait of R. C. Mills. Copies may be obtained from the Department of Economics, University of Sydney; price 5/- for single copies, 4/- for orders of 20 or more, postage included in both cases: See "Books Received" for a notice of this publication.

LIST OF BRANCH SECRETARIES

- New South Wales*: J. R. Wilson, c/o Department of Economics, University of Sydney, Sydney, N.S.W.
- Victoria*: D. M. Hocking, Department of Economics, University of Melbourne, Carlton, N.3, Victoria.
- Queensland*: A. J. Reitsma, Department of Economics, University of Queensland, St. Lucia, Brisbane, S.W.6, Queensland.
- South Australia*: D. Simmons, Department of Economics, The University, Box 498 D, G.P.O., Adelaide, South Australia.
- Western Australia*: W. R. Rogers, 25 Hobbs Avenue, Dalkeith, Western Australia.
- Tasmania*: D. E. Kirby, Box 665 E, G.P.O., Hobart, Tasmania.
- Canberra*: Dr. W. E. G. Salter, Department of Economics, Australian National University, Canberra, A.C.T.
- Auckland*: A. D. Brownlie, Economics Department, University College, P.O. Box 2553, Auckland, New Zealand.
- Wellington*: I. F. E. Wilson, c/o Bowden, Bass & Cox, Public Accountants, 328-330 Lambton Quay, Wellington, New Zealand.
- Christchurch*: N. L. McBeth, c/o "Press", The Square, Christchurch, New Zealand.
- Dunedin*: W. A. Poole, University of Otago, Union Street, Dunedin, New Zealand.

THE SOUTH AFRICAN JOURNAL OF ECONOMICS

Editors: W. J. Busschau, C. S. Richards (Managing Editor), H. M. Robertson

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REVIEWS

Economic and Technical Problems of Australia's Rural Industries.

By D. B. WILLIAMS. (Melbourne University Press, Carlton, Victoria, 1957.) Pp. 146. 27/6 Aust.

This book, written by a former Assistant Director of the Bureau of Agricultural Economics, is stated to be a "brief review" of recent economic and technical developments in Australian agriculture. It does not purport to be a systematic analysis of Australian agricultural policy, though in the foreword the author expresses the hope that it may stimulate some more intensive investigations. In few places does Dr. Williams go beyond broad description, except where he wishes to canvass personal judgments.

The somewhat random choice of topics for discussion and the seemingly disproportionate amount of space allocated to transitory as compared with more significant issues suggests that the book might essentially represent a sampling of the files passing across the author's desk. Such information may throw some light on contemporary agricultural developments, but it is not the stuff of which serious studies of agricultural policy are made.

The introductory chapter, a rather woolly description of the influences shaping Australian agricultural policy, may unduly discourage some readers as it is the most badly written chapter in the book. Dr. Williams stands squarely on the side of those who argue that Australia should channel increased resources into its primary rather than its secondary industries. "The expansion of many non-rural industries, which cannot compete with imports without undue amounts of direct and indirect protection," he says, "involves a cost burden on our rural industries which is the very antithesis of well-directed economic growth" (p. 3).

Perhaps the predominant theme in this and the succeeding chapter on post-war economic policies is the now well-accepted fact that, in Australia, agricultural policy is influenced more by national economic objectives such as full employment and balance-of-payments equilibrium, rather than by specifically agricultural objectives.

After a heroic attempt to outline the structure of Australian agriculture in nine pages, the author moves on to a discussion of price and marketing policies. Though this discussion ultimately proceeds on a commodity basis, some introductory comments by the author on the prevailing method of agricultural pricing by reference to assessed production costs are refreshing and will be revealing to some people. For instance, Dr. Williams points out that some farm types have been excluded from cost analyses, "despite the fact that they represent a most significant section of the industry concerned". Moreover he says that "changing market conditions tend to influence the way in which particular items are included in the cost formula, and to influence the

negotiations as to how year to year cost movements are to be made" (p. 37). And yet people in this country, the Prime Minister included, talk about the "objective" and "technically correct" assessment of unit production costs.

Next follow two chapters on land settlement and rural taxation, topics which appear to have received a disproportionately large amount of attention. The former chapter is largely given over to a discussion of problems of Northern Australia. The author reveals that he shares with many other Australian agricultural administrators the usually unquestioned, but nevertheless unsubstantiated, belief that subdivision of rural holdings is a necessary prerequisite to agricultural development. In the next chapter recent changes in taxation law affecting rural producers are outlined. Williams asserts, without giving any concrete evidence, that "taxation allowances have proved to be one of the most effective measures adopted by the government to encourage rural development" (p. 71). The reviewer would suggest that the exact influence of these measures on rural investment is still a moot point.

Trends in rural investment and borrowing are next examined, and the recent tendency of Australian farmers to finance investment out of savings is stressed. Williams is an ardent supporter of the established B.A.E. view that present bank credit facilities and practices are not adjusted to the needs of the rural industries. The succeeding three chapters outlining recent developments in the application of new agricultural practices are purely descriptive on a somewhat technical plane.

A chapter on scientific and advisory services provides the author with an opportunity to present some facts about recruitment and salary problems in research and extension agencies and also a chance to make unfavourable comparisons with the American system. Williams implies that effective research is not likely to be done in the universities or elsewhere unless it is "co-ordinated". "This", he says, "is being achieved to an increasing extent, which is leading inevitably to the Commonwealth's assuming a more dominant role in the administration of agricultural research" (p. 103). The reviewer's experiences at the hands of would-be co-ordinators of research lead him to exactly the opposite conclusion to Dr. Williams.

In the final chapter, Williams discusses contemporary policy issues. The author, it appears, is an "agricultural expansionist" with some qualifications, though it is possible that his position is explained by the date the book went to press. The adverse trends in overseas markets coupled with the drought in 1957 have left such a mark on the rural industries that it may well be that this book deals with a stage in agricultural policy that is now a matter of history. However, some of the significant issues posed by Dr. Williams still remain and are deserving of the attention that he suggests. The effects of national wages policy and transport costs on the rural industries are two of these.

The most disturbing thing about this book to the reviewer is not the actual text, but what the author reveals inadvertently about the assumptions as to the nature of government which he takes for granted.

Here, in this book, a senior civil servant, whatever the disclaimers in his preface, writes about agricultural policy as seen from his desk in Canberra. There seems to be no doubt in his mind that it is the administrators who do and should predominantly shape agricultural policy. In his opening sentence, he speaks of "the administrative skill and acumen of those responsible for Australian economic policy" and after numerous references in the intervening pages to "policy makers" and how they must mould the climate of political and public opinion (p. 53), he presents on the last page an even clearer picture of his administrative credo. "It is within the context of day-to-day administrative decisions . . .", he writes, "that leadership in rural policy must arise and find expression" (p. 130). It is undoubtedly this belief which prompts the author to ascribe much of the developments in Australian agriculture since 1951 to administrative acts in Canberra, whereas the perspective of history will probably reveal that exogenous factors like the price of wool were the real determinants of progress in these years.

The reviewer accepts the fact that agricultural administrators must assume certain roles by virtue of being located in a "clientele" department, and he also agrees that in Australia "we have developed a tendency to rely on government activity and to look to governments for leadership" (p. 105), but he does not believe that agricultural policy is shaped as exclusively by the Canberra planners (to use the author's term) as Dr. Williams would have us believe. Whatever the true picture, the fact that such views are expressed suggests that it behoves farmers' organizations and legislators to take a more intelligent and more broadly based interest in the formation of Australian agricultural policy than they have done in the past.

KEITH O. CAMPBELL

University of Sydney.

Ownership and Control of Australian Companies. By E. L. WHEELWRIGHT. (The Law Book Co. of Australasia Pty. Ltd., Sydney, 1957.) Pp. xii + 121 + Appendix 85 pp. 42/- Aust.

Mr. Wheelwright has produced a veritable Who's Who, or, better perhaps, a Debrett of Australian companies. Selecting the 102 companies with shareholders' funds of £2 millions or more in 1953, the author has put each of them on the dissecting table for an inspection of their economic gizzards. The conclusions he reaches after his vivisection are, in the main, similar to those reached by investigators into similar phenomena in the U.S.A. and the U.K.

The book represents an excellent piece of empirical research, obviously carried out with great patience and perseverance. For each company (except two which historical accidents made it necessary to treat in a slightly different way), information was extracted from the annual returns, covering paid-up capital, total number of shareholdings, number of shareholdings less than £1,000, between £1,000 and

£10,000 and the number and names of all shareholdings of £10,000 and over, together with the names and amounts of shareholdings less than £10,000 which appeared to be of interest for control purposes. These details, together with the names of directors and the voting power of shares for each company, are given in the Appendix, and it is this comprehensiveness of basic data which makes the work valuable for students of the limited liability company as an Australian economic institution.

An introductory discussion on the study and its setting is followed by an explanation of the basis on which the companies were selected and some notes on the source material and method used. Then follows an analysis of the data under the headings of Ownership—Voting Shares, Ownership of Non-Voting Preference Shares, Distribution of All Shares, Overseas Interests—Large Shareholdings, Control, and Director Interests. Wherever practicable, the results of the analysis are related to those of comparable studies in the U.S.A. and the U.K.

I suppose it is the duty of a reviewer to direct attention to errors which are revealed by his perusal of a book. In this case such attention is reluctantly drawn to a curious slip in the last line of Table III at page 42, where the percentage averages per company of number of shareholdings in the categories selected are shown as being different from, instead of the same as, the percentages given immediately above for all companies.

Another minor criticism might also be directed at some of the information in Table I, on pp. 25-28. Of the 102 companies listed, a consolidated figure for shareholders' funds is shown as "not available" for twenty-four of them. The author points out that this means that no such consolidated figure is given in the Sydney Stock Exchange Investment Service, which was used as the source of this information. However, in view of the fact that the relevant balance sheets themselves were available for these companies (see p. 33), it is submitted that reference to them would have allowed the number of "Not Available" companies to be reduced somewhat, especially in relation to those registered under Victorian company legislation, which provides that a holding company shall publish either consolidated financial statements or statements for the holding company and each of its subsidiaries. But it is freely admitted that the point is not a material one in relation to the purpose or scope of the enquiry and does nothing to detract from its usefulness and significance.

L. GOLDBERG

University of Melbourne.

Income and Wealth Series VI. Edited by MILTON GILBERT and RICHARD STONE. (Bowes and Bowes, London, 1957.) Pp. xiv + 306. 42/- stg.

This book contains ten papers presented at the Fourth Conference of the International Association for Research in Income and Wealth,

held at Hindsgavl (Denmark) in 1955. The first three papers relate to econometric model-building, and assess the reliability, for economic forecasting purposes, of particular models that have been developed in the United States, the Netherlands and Norway. Non-mathematicians will be grateful to C. F. Christ for the clear description of model-building procedure which precedes his comparison of the usefulness of nine theoretical models constructed in U.S.A. between 1939 and 1955. Sceptics of the model-building approach to policy-making will find some comfort in the fact that even the best of these models proved to be rather less reliable, in forecasting 1952 values, than a naive model which assumed no change from the previous year.

The other two model-building papers, which discuss models actually used by government agencies in the Netherlands and Norway, show more encouraging results. The first, by J. Lips and D. B. J. Schouten, investigates the reliability of the model used, for fiscal policy-making purposes, by the Central Planning Bureau of the Netherlands; and the second, by P. J. Bjerve, describes a model used for forecasting bank liquidity in Norway as a guide to monetary policy in that country. An interesting section of the latter paper shows how an econometric model may be constructed on the basis of a system of double-entry accounts.

The second section of the book contains seven papers on income distribution. Of these, two (by Dorothy S. Brady and R. Bentzel) are mainly concerned with theoretical problems associated with the interpretation of changes in income distribution, and the remainder (by K. Bjerke, S. A. Goldberg and Jenny R. Podoluk, H. P. Brown, Dorothy Cole and J. E. G. Utting, and O. Aukrust) analyse various aspects of income distribution in particular countries (respectively Denmark, Canada, Australia, Cambridgeshire and Norway).

Australian readers will be particularly interested in H. P. Brown's path-breaking analysis of income distribution in Australia, mainly in relation to the year 1942-43. Separate size distributions are given for that year by sex and age groups, States and grade of occupation (employees, proprietors and rentiers). Another table gives size distributions for adult male employees in four industries in 1938, and for Commonwealth public service administrative officers in 1937, and 1955. In the final and most novel section of his paper Mr. Brown develops what he calls "an inferiority index", designed to measure the inequality of income distribution by relating a given level of income to the average of incomes above that level on the one hand and the average of incomes below the given income on the other. This index, the author suggests, corresponds to an individual's conception of income inequality, and can be calculated for particular groups or for the whole community as well as for individuals. The final table in Mr. Brown's paper calculates inferiority indexes for various groups (sex, age, State, grade of occupation) in 1942-43, for employees and non-employees from 1938-39 to 1942-43, for adult male employees in four industries in 1938, and for the Commonwealth public service in 1937

and 1955. Unfortunately there are several printing errors which tend to obscure the sense of the paper, e.g. Table X on p. 219 should read Table IX; 1.51_d on p. 219 and p. 220 should read 1.51_d; 1001' on p. 220 should read 1001'; and in Table VI a column of figures representing the December 1954 size distribution is omitted.

RUSSELL MATHEWS

University of Adelaide.

An Economic Theory of Democracy. By ANTHONY DOWNS. (Harpers, New York, 1957.) Pp. ix + 310. \$4.50.

This important and lucidly written book attempts to work out a behaviour rule for governments, comparable to the rules economic theory uses in predicting the actions of firms and of consumers.

Downs constructs a model which posits that parties and voters behave rationally, in the economic sense of that term. Parties are postulated to be political entrepreneurs. Their motive is self-interest; to attain and keep office they will formulate whatever policies they believe will maximize support.

Downs deals with political decision-making where "perfect information" exists, then considers the effects of uncertainty, and, in one of his most suggestive sections, the relation of information costs to political behaviour. The book ends with twenty-five allegedly testable propositions, derived from the party-motivation, the citizen-rationality hypothesis, or both, e.g. "Because nearly every citizen realizes his vote is not decisive in each election, the incentive of most citizens to acquire information before voting is very small".

The model, of course, is very restricted, and Downs has to narrow down "Democracy" to "government", this again to "party". It would be interesting to hear what judges or administrators maximize. His treatment of ideologies is unconvincing.

But this is an important work; those who have no time to read it should at least look at Downs' article in the *Journal of Political Economy*, April 1957.

HENRY MAYER

University of Sydney.

Sales Taxation. By JOHN F. DUE. (Routledge & Kegan Paul, London, 1957.) Pp. 396. 40/- stg.

An up-to-date coverage of sales taxation in the non-communist world may not justify many thousand pages but it is a valiant effort to use less than 400. The virtues and deficiencies of this volume arise from the feat of compression which has been performed.

The survey of sales taxes in some twenty-seven countries has, if one may judge by the Australian section, been admirably performed. It gives a quick and clear picture of what is done in each country. The remainder of the volume is an all too brief introduction and conclusion.

Many points are raised in summary form but few are covered adequately. Of Australian interest is the emphasis on sales tax in Federal systems as the independent source of revenue for that level of government which has not pre-empted income tax.

Unfortunately sales tax has, of necessity, been so narrowly defined that many associated "business" taxes are not referred to—retail licence fees, pay-roll taxes, stamp duties and (negatively) subsidies. The absence of any reference to the U.S.S.R. where, it would appear, turnover taxes have been most fully used for a whole range of purposes also detracts from the general usefulness of the book. For example there is little, if any, reference to the role of sales taxes in guiding investment, restraining imports or checking excess profits.

But (near) pocket compendiums have their role; this is a good one and for perhaps half-a-dozen people in Australia, an essential one.

H. P. BROWN

Australian National University.

An Economic Survey of Northern Ireland. By K. S. ISLES and NORMAN CUTHBERT. (H.M. Stationery Office, Belfast, 1957.) Pp. xxv + 646. 35/- stg.

The economy of Northern Ireland is comparable, as regards status, with the economy of Tasmania. That is, although isolated geographically from the rest of the United Kingdom (as Tasmania is from the rest of Australia), Northern Ireland possesses the same monetary unit, the same tariff structure and virtually the same fiscal arrangements; it allows the free migration of persons to and from the rest of the United Kingdom and the free transfer of goods and money; and its ability to initiate action in the economic field is strictly limited.

The economy of Northern Ireland is to be regarded, therefore, not as a separate entity but as a regional component of the United Kingdom economy (just as the Tasmanian economy is to be regarded as a regional component of the Australian economy); and, accordingly, an economic survey of Northern Ireland ought to concentrate on those features of the province which distinguish it, economically, from the rest of the United Kingdom.

This is the essence of the approach adopted by the authors of the above survey, which was carried out by the Economics Department of the Queen's University of Belfast at the request of the government of Northern Ireland. As they see it, the two outstanding facts which distinguish the economy of the province from that of the rest of the United Kingdom are that income per head is persistently lower and the level of unemployment persistently higher. Part I of the survey—the first three chapters—is designed to establish these two facts while Part II—chapters 4 to 17—sets out to explain them. The key chapter here is the final one for which the others (covering such topics as Export Trade, Transport, Investment, Wages and Interregional Migration) merely clear the ground. The survey is rounded off by Part III

which contains three chapters on the policy implications of Parts I and II.

Much of the statistical information which the authors required was unavailable and they were consequently obliged to set about collecting it for themselves. Details of the methods adopted in this connection are set out in a long series of appendices.

A. J. HAGGER

University of Tasmania.

Economic Backwardness and Economic Growth. By HARVEY LEIBENSTEIN. (John Wiley and Sons, New York, 1957.) Pp. ix + 295. \$6.75.

Leibenstein propounds a theory to explain both the persistence of stagnation and low incomes in backward economies and how development may commence in such circumstances. The former he explains in terms of a quasi-equilibrium system brought about by the interaction of compensating variables, the latter by his concept of dynamic disequilibrium based upon his "minimum-effort" thesis. Forces which occur to raise incomes bring into operation other forces which depress incomes. For the former to overcome the latter they must be of a certain minimum strength. He expands his theory in a stimulating and illuminating way, offering interesting explanations of the low agricultural yields, the large amount of underemployment, and the occupational distribution characteristic of a backward economy. He seeks also to explain population as an endogenous variable. It would be a useful exercise to compare his approach with the vicious circle thesis of Nurkse and others and with Myrdal's strictures on the concept of equilibrium in economies. What Leibenstein has to say is also not irrelevant to the growth models of Harrod, Domar, and others. He has offered us a useful and original approach.

JAMES P. BELSHAW

University of New England.

Business Cycles and Economic Policy. By ERIK LUNDBERG. (George Allen & Unwin, London, 1957.) Pp. xx + 346. 32/- stg.

With minor changes, this book on economic stabilization policy in Sweden in the inter-war period and since 1945, is a translation of Professor Lundberg's *Konjunkturer och Ekonomisk Politik* which was first published in 1953. It analyses the ends, means and effectiveness of the detailed physical controls and import and investment regulations used in the post-war period, and compares them with the more general methods of economic policy, particularly monetary and fiscal measures, used in the inter-war period. While this involves a detailed study of Swedish economic fluctuations and general development over the whole period, the basic problems are, of course, by no means peculiarly Swedish, and therefore Lundberg's scepticism about the possibility of interpreting accurately the effects *ex ante* as well as *ex post* of detailed

economic regulation in peacetime is of wide interest and general importance.

The book is also an account of the development of economic ideas in Sweden where economists have played an active and important part in the formulation, rationalisation, and implementation of government policy. One of the author's main objects is to show the relation between the various economic measures and the relevant economic theory.

G. A. J. SIMPSON-LEE

University of Sydney.

Activity Analysis and the Theory of Economic Equilibrium. By HELEN MAKOWER. (Macmillan, London, 1957.) Pp. xiv + 192. 41/6 Aust.

This is perhaps the best introduction to activity analysis for the non-mathematician which has yet appeared. The book is intended for the economist or advanced student familiar with traditional doctrine. The author aims to reformulate the theory of value in terms of activity analysis. The reader is taken by the hand until, in Chapter 3, he is shown the vision of resource allocation as seen by activity analysts. Readers will welcome the homespun approach to such esoteric terms as the Dual and the Simplex method, as well as the absence of such terms as convex polyhedral cone.

The author intentionally avoids both the detailed mechanics of activity analysis and its field of application to practical problems. This seems rather a pity, particularly as Chapter 5 sets out very lucidly the fundamental principles involved.

BURGESS CAMERON

Canberra University College.

Labor in a Growing Economy. By MELVIN W. REDER. (John Wiley, New York, 1957.) Pp. xii + 534. \$6.50.

This is not, as its title might suggest, a book about the labour problems of an underdeveloped economy. It is an undergraduate textbook on labour. The specific effects of growth are emphasized in so far as the discussion about labour problems is in the context of American history.

With this minor qualification, let it be said at once that this is an excellent textbook, comprehensive in scope and extremely lucid in style. It is in four parts. Part I is an introductory survey. Part II deals with industrial relations—unionism, collective bargaining and government regulation. Parts III and IV are concerned with labour economics—wages and their determination, employment and the labour market, income distribution and social security.

However, unlike most texts on labour, the different parts are linked together by an approach which explicitly recognizes and emphasizes the inter-relationships between institutional and economic

phenomena. Numerous cross-references facilitate this integration process without being unduly repetitive.

An outstanding feature of the book is that the sections dealing with wage theory are at a low level of abstraction. For example, the marginal productivity theory is briefly introduced and only superficially discussed. It is a credit to the author that these chapters should be comprehensible to the student without any background in economic theory. Nevertheless, it is a pity that the author, who is well qualified to indulge in the most complex abstractions, should not have included the more difficult pieces of theory in an appendix or two—a method successfully employed by Samuelson in his *Economics*.

This book is, of course, designed for the American market but the Australian student (and teacher) will find many of the sections on unions, collective bargaining and wage determination extremely useful. The discussion questions appended to the chapters should also prove helpful.

J. E. ISAAC

University of Melbourne.

International Monetary Policy. By W. M. SCAMMELL. (Macmillan, London, 1957.) Pp. xiv + 402. 60/- Aust.

More than ten years have now elapsed since the launching of the Bretton Woods twins, the I.M.F. and the I.B.R.D. This period is long enough to give an indication of their likeliness to fulfil the high hopes which attended their birth. This book is an attempt to assess the effectiveness of the post-war international payments system of which they were to be the keystones.

After a brief theoretical section dealing with the balance of payments, exchange rates and alternative systems of adjustment, the author recounts the development of plans for post-war economic co-operation from Article VII of the Lend-Lease Agreement to Bretton Woods. He then proceeds to describe the institutions that emerged from that conference and to assess the role they have played in the intervening years. The picture of post-war monetary arrangements is rounded out by a description of the sterling area, the European Payments Union and the pattern of world payments in the post-war period. The book then ends with a discussion of the dollar problem and various proposals for international co-operation in the achievement of full employment and the control of inflation.

On the whole the analysis is reasonably objective but suffers from a pronounced British bias in its assessment of the achievements of the various institutions. This is particularly apparent in its treatment of the I.M.F. which is described as having sunk into obscurity. There is insufficient recognition of the efforts the Fund has made to cope with its difficulties. For example, the use of the waiver of the "25 per cent rule" is merely mentioned in a footnote, whereas in fact most drawings since 1953 have been larger than 25 per cent of the member's quota.

More prominence might also have been given to the inauguration of the "stand-by arrangement" which is merely described as an interesting innovation. Advocacy of fluctuating exchange rates is a recurring theme throughout the book without, in the reviewer's opinion, sufficient recognition of the case against the extension of this practice. A minor criticism is that the account of the differences between the Keynes and White plans and the process of synthesizing them is far more detailed than required by the average reader. In spite of these criticisms the book can be recommended as a valuable review of post-war experience in the field of international payments.

D. G. BADGER

Sydney.

French Banking Structure and Credit Policy. By J. S. G. WILSON. (London School of Economics and Political Science, G. Bell & Sons, London, 1957.) Pp. vii + 453. 45/- stg.

The literature in English on the French banking system is scanty. We therefore have good reason to be grateful to Mr. Wilson who in his new book has attempted to provide not only a comprehensive description of French monetary and banking institutions but also a review of the conduct of French monetary and banking policy. Our thanks are also due to the Houblon-Norman Fund which assisted Mr. Wilson to complete his study.

Authors of studies of this type are confronted with a perpetual dilemma. Their ultimate aim is to analyse the operation of the system and the conduct of monetary policy. However, unless the institutional framework is described in sufficient detail the analysis which follows will either be unintelligible or strike the reader as unconvincing dogmatism weakly sustained by casual empiricism. On the other hand if the descriptive material is too detailed, either the reader may fail to see the wood for the trees and blame the author for his myopia or the analysis may be truncated.

Mr. Wilson meets this dilemma by dividing his book into two parts. Part I, the aim of which is primarily descriptive, deals with the commercial banks, the *banques d'affaires* and other money market institutions. It also contains an interesting account of French banking techniques. In general the author retains French banking terminology, providing explanations of the terms where necessary. Since the French banking system is complex and the terminology unfamiliar, this part of the book is not easy reading. The reader will, however, find the effort it demands worth making though it seems possible that a more careful use of chapter summaries and diagrams might have facilitated comprehension by the reader.

The second part of the book deals with the Bank of France and the conduct of monetary policy from the end of the war until 1956. This part of the book struck the reviewer as less successful principally because it is not easy, unless one is thoroughly familiar with French

economic events, to retain a clear picture of the chronology through Chapters XII and XIII. Perhaps a more generous use of graphs recording the behaviour of the main economic indicators would have helped? Indeed it is a general (though minor) criticism that some of the longer tables would have been simpler to analyse if supporting graphs had been provided.

The book contains a short but useful bibliography and a comprehensive index. There is, however, no list of tables or diagrams.

There can be no doubt that Mr. Wilson has written a careful and detailed study which will be deservedly welcomed by economists, students of comparative banking systems and bankers.

D. C. ROWAN

N.S.W. University of Technology.

Europe and the Money Muddle. By ROBERT TRIFFIN. (Yale University Press, New Haven, Conn., 1957.) Pp. 351. \$5.00.

Professor Triffin has given us what is undoubtedly the best description and appraisal of the foundation and subsequent evolution and experience of the International Monetary Fund and the European Payments Union. We are fortunate to be able to benefit from the first-hand knowledge of someone who himself played a considerable part in many of the events he describes. He is to be congratulated also on the light-hearted note he brings into the introductory matter—the review of the book by himself (which may well take the wind out of any other reviewer's sails), and his rejoinder to himself, as well as the flippant yet useful guide for the cursory reader with which he interlaces the table of contents.

Many will feel that Triffin's opening survey of the world dollar problem, in which his attitude is notably more optimistic than that of MacDougall, is less successful than the rest of the book. In particular, by concentrating upon the United States' balance of payments with, and loss of gold to, the rest of the world, he is able to argue that the world dollar problem had virtually disappeared (as it seemed when he wrote in late 1956 and early 1957); whereas it may be more accurate to say that it was becoming transformed into the more general problem of a shortage of both dollars and German marks, and the concentration of the world's gold and dollar reserves upon North and Central America and Western Germany.

His second chapter, containing a useful summary of the post-war recovery of the economy of Western Europe, stands somewhat apart from the rest of the book. For in the remaining chapters he is really concerned with *world* monetary problems. Triffin argues persuasively for the relative success achieved by the regional approach of the EPU to monetary co-operation (compared with the wider but more idealistic approach of the I.M.F.), and for building upon this foundation. But the relatively greater growth of Europe's exports to the dollar area than to other countries after 1949 does not of itself constitute an

argument (as he suggests) that the liberalisation of OEEC trade did not unduly reduce Europe's exports to the rest of the world. Account must surely be taken of the effect of the devaluations of 1949, of the U.S. recovery from recession, and of the fact that Europe's exports to non-dollar markets—which also devalued—rose much less than did intra-European trade.

Finally Triffin's far-reaching and imaginative proposals for the future development of international monetary arrangements are among the most stimulating so far published. They are unlikely to lose their relevance and importance in the foreseeable future.

J. O. N. PERKINS

University of Melbourne.

Social Security in the British Commonwealth. By RONALD MENDELSON. (Athlone Press, London; John de Graff, New York.) Pp. xv + 391.

This book provides a comparative analysis of the social security systems of Britain, Canada, Australia and New Zealand. Its coverage is not therefore quite as wide as its title suggests and there is no reference to the Asian dominions, except for the pertinent remark that "it would be wrong to regard social security as a luxury exclusively for the industrially advanced countries". The book also bears evidence of its origin as a London doctoral thesis in being somewhat orientated towards British problems, but this is an advantage rather than otherwise since during the present century Britain has, to quite a unique extent, been the political furnace in which social security devices have been tried and tempered before travelling round the world. This is true even of devices which originated outside of Britain, such as old age pensions which were introduced in some of the Australasian colonies before 1900; or the concept of a fully integrated social security system which New Zealand introduced in 1938; or social insurance itself which had its origin in continental Europe.

In the first half of the book the author gives a detailed account of the development and organization (*circa* 1950) of social security in each of the four countries. In the second half of the book the various systems are compared with respect to such matters as coverage of both persons and contingencies; adequacy and conditions of benefit; methods of finance; and administrative systems, including the place of voluntary organizations. This method inevitably lends itself to repetition and reiteration, and some space could perhaps have been saved if the author had consigned more of his text to the tabular appendix. Nevertheless, the book is much more than a dry catalogue of financial provisions and administrative arrangements. The author writes well. He has obviously reflected deeply on the lessons of the past and has interesting suggestions to make for the future.

It might be expected that the four countries examined would have roughly comparable social security systems in view of their common

legal and cultural heritage and their relatively high living standards. In fact, however, there are quite extraordinary differences among them. Britain and New Zealand have fully integrated social security systems embracing pensions, short-term benefits and health facilities. But both are countries with unitary constitutions. Federalism, although its significance is questioned by Dr. Mendelsohn, seems to preclude complete integration in either Australia (where hospitals, workers' compensation and residual relief remain with the states), or in Canada (where not only these functions, but sickness and medical assistance also remain with provincial or local authorities). On the other hand, Canada alone of the dominions has followed Britain in relying substantially on the insurance principle, having adopted it for unemployment insurance, "with little critical thought about fundamentals just about the time when its originator, Great Britain, was abandoning its more rigid features" (p. 230). In New Zealand social security is financed, in the absence of insurance contributions, largely by a special income tax levied on a proportional basis. In Australia finance is now provided exclusively by allocations from general taxation revenue. In both Australia and New Zealand the means test takes the place of an applicant's contribution record as a test of eligibility for benefit; apparently there is not the same fierce hostility to the means test in the dominions as in Britain, with its bitter memories of the old Poor Law. Canada, and more particularly, Quebec seems in the past to have relied more than other countries on voluntary charitable agencies, but Australia is the only country that now uses the voluntary Friendly Society as a channel for the payment of medical and hospital benefits.

In spite of these diversities, there is one common element which Dr. Mendelsohn detects in the development of these widely different systems during the past half century. It is "the substitution of defined benefits, dependent only on citizenship, for the arbitrariness of the Poor Law officer or the handouts of the colonial policeman" (p. 335). In Britain social insurance performed the valuable historical function of making this change politically acceptable, but Dr. Mendelsohn considers that the distinction between insurance and assistance has lost its point now that membership has become universal and compulsory. It is also administratively costly, and his description of its operation is worth quoting:

National insurance has become a giant industry. The long queues in post offices buying stamps to place on cards; the 25 million separate cards, stamped weekly and exchanged annually in quarterly "stagers"; the 25 million separate ledger record sheets at Newcastle, with spaces for 50 years' entries; the shuttle cards passing from the 997 Ministry of National Insurance local offices and the 1424 Ministry of Labour and National Service local offices and back, 100,000 of them each week in summer and 250,000 in winter; the 29 million central index slips; the annual personal statements of account and arrears notices to each of the 25 million contributors; the 64 acres of buildings at Newcastle-on-Tyne, with their own railway station and their special fleets of buses . . . (p. 232).

On the basis of his comparative study of the four countries, Dr. Mendelsohn is able to offer suggestions for the future development of

their social security systems. He would welcome, and considers inevitable, an extension of social services to cover all contingencies and all citizens in countries where this has not already happened, e.g. Canada. He would like to see the abolition of both the stamped-card system, characteristic of social insurance, and of the Means Test, characteristic of the Australian and New Zealand systems; so that any citizen would be entitled to benefit on simple proof that he was the victim of a defined contingency. Further, he would like to see benefits raised nearer to the subsistence level than is at present the case in Britain, but not so high as in New Zealand. He recognizes that in spite of administrative savings these changes would involve an increase in social security expenditure but he observes that, considered as a proportion of National Income, this amounted in 1948-49 to little more than 4 per cent in Canada, and 5 per cent in Britain and Australia, as compared with 9½ per cent in New Zealand. For finance he would replace insurance contributions from both employees and employers by a special personal income tax collected with ordinary income tax, but paid into a special fund. He would like to see the adoption in the Dominions of the British system of appeals against the decisions of administrators, and also greater participation by local bodies in administration. Finally, he would like to see more use made of social case-work methods in the handling of supplementary and residual relief in all countries.

WILFRED PREST

University of Melbourne.

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A.—AUSTRALIAN AND NEW ZEALAND PUBLICATIONS

COOMBS, H. C. *Conditions of Monetary Policy in Australia*. (R. C. Mills Memorial Lecture, University of Sydney, 1958.) Pp. 40. 5/- Aust.

This analysis of Australian central banking experience by the Governor of the Commonwealth Bank is a continuation of his discussion of the subject in the period up to 1954, which was contained in his E.S. & A. Research Lecture of that year.

This latest lecture covers principally the years 1954 to 1957. In it Dr. Coombs discusses such matters as the development of central banking control through L.G.S. ratios (coupled with use of Special Accounts), qualitative advances control and the problems presented by the growth of non-bank finance, especially hire purchase finance.

GOLDBERG, L., and HILL, V. R. *The Elements of Accounting*. 2nd ed., revised and re-set. (Melbourne University Press, Carlton, Victoria, 1958.) Pp. 300. 25/- Aust.

LAMBERTON, D. McL. *Share Price Indices in Australia*. (Law Book Co. of Australasia, Sydney, 1958.) Pp. 114. 42/- Aust.

LAWTON, G. H. (ed.). *Longmans' Australian Geographies*. (Longmans Green & Co., Melbourne, from 1956.)

A series of booklets, each of 40 pages. 1. *The Snowy Mountains Scheme*, by Robert Coggins. 2. *The Hunter Valley*, by Alan Tweedie. 3. *The Barkly Tableland*, by Mollie Bayne. 4. *The New England Plateau*, by Ellis Thorpe. 5. *Indonesia*, by Donald Fryer. 6. *The Darling Downs*, by R. Greenwood. 7. *New Guinea*, by John Andrews. 8. *The South-West*, by J. Gentilli. Probably 5/3 Aust. each.

MATHEWS, R., and GRANT, J. McB. *Inflation and Company Finance*. (Law Book Co. of Australasia, Sydney, 1958.) Pp. 179. 42/- Aust.

B.—OTHER PUBLICATIONS

ALLARDYCE, CORBIN (ed.). *Atomic Power. An Appraisal including Atomic Power in Economic Development*. (International Series of Monographs on the Economic Aspects of Nuclear Energy.) (Pergamon Press, London, 1957.) Pp. 151. 21/- stg.

This is another "pre-fusion" book, based on the state of research and development of over two years ago. However, most economists and laymen can congratulate themselves if they are no more than two years behind Sir John Cockcroft, Sir Edwin Plowden, Admiral Strauss, and other contributors. The editor, who is Adviser in Atomic Energy to the World Bank, introduces the subject with a lucid and fascinating assessment of progress made and prospects opened up. His collaborators extend the basis of scientific, engineering, and economic assumptions for the final analysis. The book is most valuable as an approach to the investment problems involved today in the development of energy sources in parts of Australia and elsewhere.

BASU, S. K. *A Survey of Contemporary Banking Trends*. (The Book Exchange, Calcutta, 1957.) Pp. 574. Rs. 16.

BEACH, E. F. *Economic Models—An Exposition*. (John Wiley & Sons, New York, 1957.) Pp. 227. \$7.50.

BERLE, A. A. JR. *Tides of Crisis. A Primer of Foreign Relations*. (Macmillan, London, 1957.) Pp. 328. 34/9 Aust.

BIEHL, M. *Der Obst-, Gemüse- und Gartenbau im Nordosten der Vereinigten Staaten von Amerika unter der Konkurrenz subtropischer Landesteile*. (Institut für Weltwirtschaft an der Universität Kiel, Kiel, 1958.) Pp. 173, 25 Schaubilder. Mit Anhang: 77 Tabellen, 6 Blätter u. 3 Schaubilder, D.M. 30.

BLEEKER, R. J. P. VAN GLINSTRA. *Guided Money*. (North-Holland Publishing Co., Amsterdam, 1956.) Pp. 173. 30/-.

Dr. Van Glinstra Bleeker complains that fiscal or monetary policies designed to affect the level of aggregate demand are inappropriate to meet situations in which demand is lacking for only one or more products. He presents

* Acknowledgment of publications does not guarantee review.

the thesis that structural maladjustments in the economy would be alleviated if consumer expenditure were to be "homed" on to specific products, by the creation of a flow of "guided" money to be used only for the purchase of those products. Part I of the book is concerned with the justification of such a policy (though no rigorous theoretical analysis of its implications is attempted); Parts II and III discuss its possible domestic and international applications.

BRECHER, IRVING. *Monetary and Fiscal Thought and Policy in Canada, 1919-39*. (University of Toronto Press, 1957.) Pp. 337. \$5.25.

The author discusses the views of the various conservative and radical groups in Canada on such questions as inflation, central banking, exchange depreciation, and budget deficits; the balancing and co-ordinating, rather than innovating, role of the economists; the general question of the inter-relation of economic thought and policy; and the development of a new climate of opinion about economic stability by 1939. Despite the writing and construction, which are both rather clumsy, the book is thorough, and should be of particular interest to Australians, who could well do with a similar study of the same period.

CASE, H. C. M., and WILLIAMS, D. B. *Fifty Years of Farm Management*. (University of Illinois Press, Urbana, 1957.) Pp. 386. \$6.00.

CHOW, G. C. *Demand for Automobiles in the United States*. (North-Holland Publishing Company, Amsterdam, 1957.) Pp. 110. 10 guilders.

The author tests a number of hypotheses purporting to explain the demand for motor-cars in the United States. The best explanation of changes in the volume of motor-car sales over the period 1921-1953 is given by a function relating sales to an index of the real price of motor-cars of all ages, real disposable income and the stock of motor-cars at the end of the preceding year.

DUE, J. F. *Sales Taxation*. (Routledge & Kegan Paul, London, 1957.) Pp. 396. 40/- stg.

F.A.O. *Program for the 1960 World Census of Agriculture*. (Food and Agriculture Organization of the United Nations, Rome, 1957.) Pp. 77. Price not stated.

FURNISS, E. S. *The Position of the Laborer in a System of Nationalism. A Study in the Labor Theories of the Later English Mercantilists*. (Kelley & Millman, New York, 1957.) Pp. 260. \$6.00.

Furniss's brilliant essay on English attitudes towards labour in the seventeenth and eighteenth centuries is an important reference for students of the history of economic thought. Not all of its arguments would be accepted without qualification today, but on the whole it has weathered the years very well. Messrs. Kelley and Millman have done well to include the book in their series of reprints of economic classics.

Only one reservation need be noted. When originally published Furniss's work contained a number of bibliographical errors. It would not have been possible to correct these in a photographic reprint, such as the present one, but the publishers could perhaps have appended their own list of errata. From the point of view especially of undergraduate readers, this would have been a very useful service.

FEDERAL RESERVE SYSTEM. *Consumer Instalment Credit*. Parts I-III. (U.S. Government Printing Office, Washington, 1957.) Price not stated.

GHOSH, ALAK. *Indian Economy. Its Nature and Problems*. (The World Press Private Ltd., Calcutta, 1957.) Pp. 368. Rs. 8.50.

An analysis "primarily oriented towards growth problems" which is divided into eight parts. They deal with the economics of underdevelopment and the nature of the Indian economy in the pre-planning period, planning and the Indian economy, natural resources and national income, population and agriculture, industry and labour, public finance, banking and currency, and trade, exchange and transport.

HUME, DAVID. *Writings on Economics*. Edited and introduced by Eugene Rotwein. (Thomas Nelson & Sons, Edinburgh, 1955.) Pp. 224. 49/9 Aust.

This will be the definitive edition of David Hume's economic writings. In addition to the famous essays Dr. Rotwein usefully reproduces extracts from Hume's correspondence discussing economic topics. The long, intelligent and learned introduction makes a new estimate of Hume's distinctive contribution to the history of economic thought. This is a beautifully printed and altogether satisfying volume, an example of what Hume would have classified as "innocent luxury".

- INMAN, P. *Labour in the Munitions Industries. (History of the Second World War.)* (H.M. Stationery Office, London, 1957.) Pp. 461. 35/- stg.
- INTERNATIONAL ASSOCIATION FOR RESEARCH IN INCOME AND WEALTH. *Income and Wealth. Series VI.* (Bowes and Bowes, London, 1957.) Pp. 306. 42/- stg.
- ISLES, K. S., and CUTHBERT, N. *An Economic Survey of Northern Ireland.* (H.M. Stationery Office, Belfast, 1957.) Pp. 646. 35/- stg.

JOHNSON, CHARLES (ed.). *The De Moneta of Nicholas Oresme and English Mint Documents.* (Thomas Nelson & Sons, Edinburgh, 1956.) Pp. 114. 33/3 Aust.

This volume of *Nelson's Medieval Texts* (ed.: Professors V. H. Galbraith and R. A. B. Mynors) presents the treatise of the 14th-century Frenchman Oresme on the theory of money, and entries relating to coinage extracted from 13th and 14th century Exchequer MSS. Each part consists of 48 double pages: on the left page the Latin text, on the right page Charles Johnson's exact translation. The introduction of the volume gives biographical data about Oresme, describes the manuscripts, and sketches the early history of English coinage.

KUCHHAL, S. C. *Corporation Finance. Principles and Problems.* (Chaitanya Publishing House, Allahabad, 1957.) Pp. 519. Rs. 11/8.

This book might be called a cyclopaedia of finance. Although it is primarily concerned with the Indian scene, which has many interesting characteristics such as the managing agency system, substantial references are also made to distinctive features of the financial systems of the more developed economies of Europe, America and the Pacific.

LEIBENSTEIN, HARVEY. *Economic Backwardness and Economic Growth.* (John Wiley & Sons, New York, 1957.) Pp. 295. \$6.75.

MAKOWER, HELEN. *Activity Analysis and the Theory of Economic Equilibrium.* (Macmillan, London, 1957.) Pp. 192. 41/6 Aust.

MATHUR, A. S. and J. S. *Trade Union Movement in India.* (Chaitanya Publishing House, Allahabad, 1957.) Pp. 303. Rs. 10.

An interesting study of the weak Indian trade union movement. Compulsory arbitration is widespread and is criticised. This should interest New Zealand readers. The political division of the four main union federations is explained and suggestions are made for strengthening trade unions in India by removing some of their organizational weaknesses.

NAIDU, B. V. NARAYANASWAMI, and DATTA, H. K. *Fundamentals of Business Organisation and Management.* 4th ed. (M. Seshachalam & Co., Madras, 1957.) Pp. 620. Rs. 12.

NANIWADA, HARUO. *Staat und Wirtschaft. Grundlegung der Nationalökonomie als der Logik der Bürgerlichen Gesellschaft.* (The Science Council of Japan, Tokyo, 1957.) Pp. 76. Price not stated.

OXENFELDT, A. R. *Economic Systems in Action.* Revised ed. (Rinehart & Co., New York, 1957.) Pp. 207. \$2.35.

PHELPS, C. W. *Accounts Receivable Financing as a Method of Business Finance.* (Commercial Credit Company, Baltimore, 1957.) Pp. 65. Price not stated.

This is a descriptive study of a form of financial assistance provided by commercial credit corporations in the United States. Originating early in this century, these companies now finance open accounts of business firms to the extent of 5 billion dollars annually. The service is used by small and medium sized businesses principally but not exclusively. Charges are based on daily balances, the institutions thus providing something similar to overdraft facilities in Australia. The cost to users is of the order of 10 per cent per annum. These institutions also provide accommodation on other bases, so that users have, from one source, a range of methods of maintaining and supplementing working capital. This is one of a series sponsored by the publisher, from which educational institutions may obtain copies on application.

POPPER, KARL R. *The Poverty of Historicism.* (Routledge & Kegan Paul, London, 1957.) Pp. 166. 16/- stg.

This revised reprint from *Economica* 1944/45 should be compulsory reading for model-builders and planners of progress. It is indispensable for the urgent task of separating causal structures that can be *known*, from more ambitious, prophetic constructs that can only be sung to the tune "Onward Christian Soldiers". In its historical role as philosophy for the rising middle classes Economics has inherited too many such hymns.

SCAMMELL, W. M. *International Monetary Policy*. (Macmillan, London, 1957.) Pp. 402. 60/- Aust.

SEN, S. R. *The Economics of Sir James Steuart*. (The London School of Economics and Political Science, G. Bell & Sons, London, 1957.) Pp. 207. 25/- net stg.

Dr. Sen gives a summary and appraisal, supported by extensive quotation, of Steuart's leading ideas on economic theory and policy. There is also a short biography, a discussion of Steuart's methodology, and a chapter on his role as adviser to the East India Company on currency problems in Bengal. Some may feel that Dr. Sen is, if anything, a little over-generous in his assessment of Steuart's place in the history of economic thought, but this is essentially a balanced, fair-minded and very useful book.

SHENOY, B. R. *The Indian Economic Scene—Some Aspects*. (Presidential Address to the Fortieth Annual Conference of the Indian Economic Association, 1957.) Pp. 50. Price not stated.

SINGH, D. BRIGHT. *Inflationary Price Trends in India since 1939*. (Asia Publishing House, Bombay, 1957.) Pp. 284. Rs. 16.50.

This theoretical and empirical survey first sets out the war-time and post-war trends, with an account of the distortions caused by war financing and the subsequent national and international policies. After a discussion of the effects of rising prices on the costs of living, there is an appraisal of the Indian price controls and the pricing policy that has emerged.

SPULBER, NICHOLAS. *The Economics of Communist Eastern Europe*. (Massachusetts Institute of Technology, John Wiley & Sons, New York, 1957.) Pp. 525. \$12.50.

In recent years there has poured forth from the M.I.T. a veritable deluge of books all of which we are told will provide us with a penetrating analysis of one or other branch of the Social Sciences. Particularly ambitious have been those dealing with the changes taking place in the international scene. Professor Spulber's book is one of this series. Its purpose is to undertake an examination of the economic development of Eastern European countries since 1945. While not helping us to understand very much more about the origins of the tremendous forces unleashed in Poland and Hungary in the autumn of 1956 it does provide us with a valuable source of economic data. A professional book for professionals.

TOSTLEBE, A. S. *Capital in Agriculture. Its Formation and Financing since 1870*. (Princeton University Press, 1957.) Pp. 232. \$6.00.

This is an attempt to measure the long-term growth of the physical and financial assets used in farming in the U.S.A., to relate this growth of capital to the growth of the farm labour force and to output, and to discover the determinants of investment and the sources of financing that made them possible.

UNITED NATIONS. *New Sources of Energy and Economic Development*. (U.N. Department of Economic and Social Affairs, New York, 1957.) Pp. 150. 9/- stg.

Part I reviews the stage of development, location, and main uses of power from solar, wind, tidal and geothermic sources and the thermal differences in sea water. Part II consists of extracts from expert technical reports on the method of utilizing each source. Part III is an annotated 30 page bibliography, mainly of technical works in the field. Utilization of these new sources of energy could be very valuable for underdeveloped countries lacking conventional energy resources and where small amounts of power are required over large areas for such purposes as irrigation, drainage, food preservation and communications.

WILSON, CHARLES. *Profit and Power. A Study of England and the Dutch Wars*. (Longmans, Green & Co., London, 1957.) Pp. 169. 43/6 Aust.

A very useful factual survey of the course of events and the connection between commercial rivalry and war. The description of the economic aspects of England and Holland is well done but the conclusion that hostilities ended because religion was more important than commercial quarrels is unconvincing. Reasoning is sometimes obscured by loose terminology; for example, "Dutch technical superiority in economic matters" where "commercial" should be substituted for "economic". In naval history there is a similar looseness in the author's use of, and excessive fondness for, "strategic", while "strategic" and "economic" matters are treated as being distinct, even antithetical, like Profit and Power of the title.

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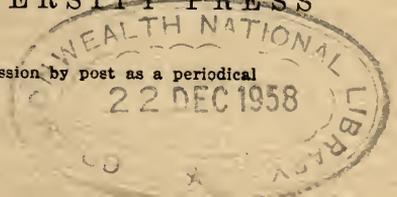
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THE AUSTRALIAN ECONOMY, NOVEMBER 1958

1. *The Basic Problem*

As 1958 draws to a close the key factor in the Australian economic situation is the balance of payments. The balance of payments is in turn predominantly influenced by the price of wool. The budgetary, monetary and trade policies which have been adopted since the beginning of the current financial year have been based on the implicit hope or belief that Australia's external position would not continue to deteriorate during the year, and the growing evidence of an economic recovery in the United States has provided some justification for this optimism. Nevertheless, most commodity prices have continued to sag. When the Australian wool selling season opened at the end of August, average prices were some 10 per cent below the closing prices of the previous season and more than 20 per cent below the 1957-8 average prices. With wool production expected to be 3 per cent down on the previous year, and with carryover stocks considerably lower this year, the reduction in wool exports could easily exceed £100m. if prices do not improve.

Although the prospects for food exports are somewhat brighter, mainly because of the better season, the price outlook for these commodities remains uncertain. Any improvement in this direction is in any case likely to be offset by a reduction in base metal exports, following the quotas which the U.S. recently imposed on lead and zinc imports. A rough indication of trends in export prices and values may be obtained by comparing the latest price figures with 1957-8 prices and values (Table I).

In July an official Commonwealth Government survey estimated that, if export prices were to show no improvement over 1957-8 figures, export incomes would not exceed £750m. in the current year, even with favourable seasonal conditions; and assuming little or no change in imports, net invisibles and the net capital inflow, it was believed that our overseas reserves might be reduced by some £125m. by the end of the year.¹ The fall in wool prices and other developments since the official estimates were made suggest that the position is now at least £50m. worse. Table II indicates that this would imply a fall of perhaps £175m. in our reserves, which would drop from £525m. to £350m. in the year.

1. Professor Cochrane's August estimate of a fall in international reserves of £100m.-£125m., depending on whether the capital inflow is £125m. or £100m., was rather more optimistic than the official estimate. See "The Australian Economy, July 1958", *Economic Record*, August 1958, p. 153.

TABLE I
Trends in Export Values and Prices

| | Value of Exports (£A million F.O.B.) | | Price Indexes of Predominant Commodity (1956-7 = 100) | |
|-------------------------|---|------------|---|------------|
| | 1956-7 | 1957-8 | 1957-8 | Sept. 1958 |
| Wool and Sheepskins .. | 504 | 394 | 81 | 61* |
| Wheat and Flour | 82 | 43 | 109 | 111* |
| Other Grains | 22 | 16 | — | — |
| Meats | 51 | 55 | 90* | 93* |
| Butter | 26 | 16 | 87 | 76 |
| Other Dairy Products .. | 19 | 15 | — | — |
| Fruits | 25 | 35 | 107* | 114* |
| Sugar | 29 | 35 | 103 | 95* |
| Base Metals | 58 | 42 | 73 | 68 |
| Iron and Steel | 27 | 23 | — | — |
| Petroleum, Oils | 11 | 17 | — | — |
| Vehicles and Parts .. . | 8 | 8 | — | — |
| Other | 117 | 115 | — | — |
| | <u>979</u> | <u>814</u> | | |

* Subject to Revision

Sources: *Treasury Information Bulletin, No. 11* (July 1958)
Commonwealth Statistician's *Monthly Index of Australian Export Prices*

The prospect of a deficit on current account of £300 m. is not one to be viewed lightly, especially as it is by no means certain that we shall be able to maintain the high rate of capital inflow that has been achieved in recent years. Indeed, continued weakness in our balance of payments on current account could easily lead to a reversal of the capital flow. Even if American recovery should produce the long-awaited lift in commodity prices, the prospects for the immediate future are rather gloomy.

Despite a vigorous trade promotion drive, the longer-term outlook for exports is not much more encouraging, at least insofar as primary products are concerned. The probability of continued marketing dif-

TABLE II
Australian Balance of Payments Prospects
(£A million)

| | Actual 1956-7 | Actual 1957-8 | Estimate 1958-9 |
|--|------------------|------------------|--------------------|
| Exports f.o.b. | 978 | 814 | 700 |
| Imports f.o.b. | -718 | -791 | -800 |
| Trade Balance | 260 | 23 | -100 |
| Net Invisibles | -167 | -201 | -200 |
| Balance on Current Account | 93 | -178 | -300 |
| Capital Inflow | 119 | 136 | 125 |
| Change in International Reserves | 212 | -42 | -175 |

difficulties for Australia's exports is underlined by such events as the failure of the Commonwealth Trade and Economic Conference, held recently at Montreal, to agree on proposals to establish a commodity price-stabilization scheme; the British relaxation of restrictions on dollar imports, with its implied threat of greater American competition in the U.K. market; the recent reduction of minimum prices under the U.K. meat agreement; the greater competition which Australian exporters are facing in their traditional markets from European and American producers, some of whom are supported by government export subsidies, price support schemes and dumping devices; the effects on some of our weaker export industries of the European Economic Community and the proposed Free Trade Area; and the intensification of import restrictions in New Zealand following the overseas trade difficulties experienced by that country.

A deterioration in the balance of payments, following a fall in export prices, is not a new experience for Australia. What is perhaps surprising in the current situation is the relative ease with which the internal economy has taken the shock. Table III indicates that despite the fall in farm incomes, and a rise in unemployment figures in the early part of the year, the level of internal activity in 1957-8 did not react significantly to the unfavourable external situation.

It is therefore worth while reviewing the action that has been taken to prevent the adverse balance of payments from resulting in unnecessary disturbance to the Australian economy, and to consider whether the policies that have already been adopted are likely to remain effective during the current year.

In addition to the problem of maintaining internal stability, however, the question arises as to what action is necessary to arrest the adverse trend in the balance of payments? Moreover, since a high rate of development continues to be one of the over-riding objectives of Australian policy, it is necessary to ask whether the restoration of balance of payments equilibrium will check the impetus to internal expansion? Under present circumstances this may be regarded as the basic problem of Australian economic policy. Obviously its solution depends on finding a means of financing economic development which will avoid the continued use of our international reserves.

2. Recent Trends and Policies

In reviewing the Government's current economic policy it is necessary to turn to the Commonwealth Treasurer's Budget Speech for 1958-9 and the annual reports of the Commonwealth Bank and the Tariff Board. These documents show that the Government's main concern so far has been to cushion the effects of the external deficit on the domestic economy, in the hope that the external position will soon improve. The effect of the 1957-8 Budget was only mildly expansionary (see Table V). Although it provided for substantial tax concessions and increased expenditure on social services and payments to the States, it

TABLE III
Indicators of Internal Activity—Australia

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------------|------------------|------------------------|--------------------|------------------------|--------------------------------|--|--|--------------------------------------|---|------------------------------------|
| | Farmers' Incomes | Other Personal Incomes | Factory Production | Retail Sales | New Houses and Flats Commenced | Wholesale Prices | Retail Prices | Nominal Wage Rates | Civilian Employment | Persons on Unemployment Benefit |
| | (£ million) | (£ million) | (1955-6=100) | (Quarterly average £m) | (Quarterly average) | (Basic Materials and Foodstuffs, 1955-6=100) | (Interim Index, excl. potatoes and onions, 1955-6=100) | (Adult Males six States, 1955-6=100) | (Monthly average in thousands, or end of month) | (Monthly average, or end of month) |
| 1955-6 | 434 | 3,782 | 100 | 542 | 19,309 | 100 | 100 | 100† | 2,835 | 4,014 |
| 1956-7 | 527 | 3,999 | 104 | 564 | 18,155 | 103 | 106 | 105† | 2,890 | 12,666 |
| 1957-8 | 390 | 4,159* | 112 | 594 | 17,363 | 101 | 108 | 107 | 2,876 | 23,900 |
| 1958—April | — | — | 117 | — | — | 100 | — | — | 2,889 | 26,811 |
| May | — | — | 111 | 588 | 19,493 | 101 | 109 | 108 | 2,889 | 27,282 |
| June | — | — | 106 | — | — | 101 | — | — | 2,887 | 29,418 |
| July | — | — | 108 | — | — | 101 | — | — | 2,884 | 29,915 |
| August | — | — | 113 | — | 21,235* | 101* | 109 | — | 2,880 | 28,278 |
| September | — | — | — | — | — | 101* | — | — | — | 26,002 |

* Preliminary

† Partly estimated

Sources: Commonwealth Statistician, *National Income and Expenditure 1957-58* (Columns 1-2)
 " " " *Monthly Review of Business Statistics* (Columns 4-8)
 " " " *Monthly Bulletin of Employment Statistics* (Columns 9-10)
 A.N.Z. Bank *Quarterly Survey* (Column 3)

resulted in a larger current surplus than had been achieved in 1956-7, and despite increased works expenditure and debt redemption it was still possible to reduce Treasury Bills by £10m. during the year. Tax concessions doubtless contributed to the rise in private investment and consumption expenditure, but the availability of hire-purchase finance was probably a more important factor in stimulating consumption.²

The main impetus to expansion in 1957-8 probably came from central banking action. As a result of a Central Bank directive in May 1957, bank advances had stopped falling in the early part of 1957-8. In December 1957 the Central Bank indicated that, in view of the bad season and the uncertain economic situation, an increase in bank advances was now appropriate (except for hire-purchase businesses). To facilitate credit expansion and prevent the fall in overseas funds from unduly affecting bank liquidity, substantial releases from Special Account were made during 1958. The effect of these policies is shown in Table IV. The substantial increase in bank advances undoubtedly helped to sustain the level of domestic spending in 1957-8 in the face of falling export incomes. The trading banks are now not likely to have serious liquidity problems until the last quarter of the financial year, when the end of the export season coincides with heavy taxation payments. Meanwhile the Central Bank has indicated that, although it is worried about the balance of payments situation, its main concern at present is with employment, and that it will "assist in keeping expenditure high enough to maintain employment at a satisfactory level".³

The Government's major policy declaration for the year, the Treasurer's Budget Speech, also emphasized the need for increased expenditure in order that the work force may be kept fully employed, and to ensure that the increased production which is expected in 1958-9 is fully absorbed. Table V indicates the extent of the expansionary action contemplated in the Budget. In the discussion which followed the Budget Speech there was, surprisingly, almost no recognition of a very important technical change which was made in the presentation of this year's estimates. In previous years, apart from an overall review, in terms of cash, of the previous year's results, attention was always concentrated on the Consolidated Revenue Fund. Although some reference was made to proposed Loan Fund and Trust Fund transactions, there was no consolidated statement of the budgetary prospects. Because of movements in Trust Fund balances it was therefore impossible to make an accurate assessment of the probable overall effect on the economy of the Government's financial activities. This serious deficiency has been repaired in this year's Budget, which for the first time presents an overall summary of budget prospects, in terms of a cash statement which comprehends the Consolidated Revenue Fund, the Loan Fund, and the National Debt Sinking Fund and other Trust Funds. One reason for this changed procedure, as Professor

2. Cf. D. Cochrane, *ibid.*, p. 151.

3. Commonwealth Bank of Australia, *Report for the Year Ended 30th June, 1958*, p. 4.

TABLE IV
Australian Banking Statistics

| Month | Total Deposits £m. | Liquid Assets and Government Securities | | Special Accounts | | Advances £m. |
|------------|-----------------------|---|-----------------------------|------------------|-----------------------------|-----------------|
| | | Total £m. | Percentage of Deposits % | Total £m. | Percentage of Deposits % | |
| 1957—March | 1,603·7 | 391·6 | 24·4 | 319·9 | 20·0 | 830·7 |
| June | 1,556·0 | 294·3 | 18·9 | 339·6 | 21·8 | 868·8 |
| September | 1,538·1 | 300·9 | 19·6 | 339·6 | 22·1 | 860·7 |
| December | 1,646·7 | 360·5 | 21·9 | 339·6 | 20·6 | 870·9 |
| 1958—March | 1,658·5 | 412·8 | 24·9 | 324·5 | 19·6 | 862·7 |
| June | 1,558·3 | 288·7 | 18·5 | 282·1 | 18·1 | 945·6 |
| September | 1,545·6 | 304·4 | 19·7 | 264·6 | 17·2 | 948·8 |

Sources: *Treasury Information Bulletin, No. 11* (July 1958)
Commonwealth Statistician's *Monthly Bulletin of Australian Banking Statistics*

Cochrane has suggested,⁴ was probably the Government's concern with the large volume of debt which is maturing during the current financial year. It is not possible to agree with Professor Cochrane, however, that this changed form of presentation has led to "confusion over the true budgetary position". The true budgetary position can only be ascertained by reference to all the Government's financial activities. This involves, first, separating the Government's current transactions from its capital transactions; secondly, distinguishing capital transactions involving goods and services from capital transactions involving changes in indebtedness; and thirdly, differentiating between changes in long-term indebtedness (inscribed stock and bonds) and changes in short-term indebtedness (mainly treasury bills). From the information given in this year's Budget Speech it is possible to make these distinctions for the first time, although the form of presentation of the relevant information could be improved by eliminating book-keeping transfers between Funds. In Table V the figures are rearranged and presented in a consolidated statement of the expected financial results for 1958-9 (actual results in 1956-7 and 1957-8 are given for comparative purposes). The classification into current and capital transactions is still not perfect, because transfers between Trust Funds and other Funds are not completely eliminated; but the Table contains all the essential information relating to the Government's expected financial activities.

It will be seen from Table V that there has been a considerable change of emphasis in budgetary policy in 1958-9. Current revenue is expected to be lower than in 1957-8, but provision is made in the Budget both for higher current expenditure and for increased spending on Commonwealth and State works. The large Treasury Bill issue required to cover the deficit in the Capital Account provides an indication of the stimulus which the economy is likely to receive from the

4. D. Cochrane, "The Australian Economy, July, 1958", *op. cit.*, p. 157.

TABLE V
Consolidated Statement of Commonwealth Cash Receipts and Outlay—All Funds
 (£ million)

| Receipts | Actual 1956-7 | Actual 1957-8 | Estimated 1958-9 | Outlay | Actual 1956-7 | Actual 1957-8 | Estimated 1958-9 |
|---------------------------------|------------------|------------------|---------------------|--------------------------------|------------------|------------------|---------------------|
| CURRENT ACCOUNT | | | | | | | |
| Taxation Revenue | £1,095 | £1,157 | £1,143 | Current Expenditure— | £314 | £313 | £320 |
| Other Revenue | 139 | 154 | 159 | War and Defence | 224 | 247 | 274 |
| | | | | National Welfare Fund .. . | 244 | 271 | 287 |
| | | | | Payments to States | 233 | 252 | 268 |
| | | | | Other Current Expenditure | 219 | 228 | 153 |
| | | | | Surplus on Current Account .. | — | — | — |
| | £1,234 | £1,311 | £1,302 | | £1,234 | £1,311 | £1,302 |
| CAPITAL ACCOUNT | | | | | | | |
| Surplus on Current Account .. | £219 | £228 | £153 | Commonwealth Capital Works | £108 | £124 | £129 |
| National Debt Sinking Fund | | | | State Works, Housing, War | | | |
| Income | | 50 | 45 | Service Land Settlement .. . | 200 | 209 | 217 |
| Increase in other Trust Fund | | | | Redemption of Maturing Long- | | | |
| Balances | 37 | 13 | 3 | Term Debt | 30 | 63 | 80 |
| Borrowing from Public | 99 | 115 | 115 | Reduction in Treasury Bills .. | 15 | 10 | — |
| Treasury Bill Borrowing | — | — | 110 | Increase in Cash Balances .. . | 2 | — | — |
| | £355 | £406 | £426 | | £355 | £406 | £426 |

Source: Derived from Commonwealth Treasurer's Budget Speeches, 1957-8 and 1958-9

Budget. The expansionary effect of the Government's expenditure for purposes of debt redemption is difficult to estimate, but its influence on the money supply and the level of spending may be broadly regarded as similar to the effect of open-market purchases of securities by the Central Bank. Doubts have been expressed as to whether the Budget went far enough in the direction of supporting the level of internal activity,⁵ and these doubts are likely to be reinforced as a result of the further fall in export income that now seems likely. But although it will be necessary to keep a close watch on employment and price trends, the internal economy still seems to be in a reasonable state of balance.

It must be emphasized, however, that all the Government has done is to shelter the domestic economy from the effects of the adverse balance of payments. No steps have yet been taken to restore equilibrium in the external position, but if export prices do not soon show a marked recovery corrective action cannot be long delayed. In recent years import restrictions have been the principal weapon used to protect Australia's international reserves, and we might expect them to be used once again as a first line of defence. However, in their Annual Reports both the Commonwealth Bank and the Tariff Board have referred to the dangers involved in the continued use of import restrictions, the Bank emphasizing their distorting effect on the allocation of resources and the Tariff Board expressing its concern at the possibility that our export receipts may soon be insufficient to finance Australian industry's essential requirements of imported raw materials and capital equipment. In view of these and other frequently expressed doubts⁶ about the desirability of import restrictions, the time has surely come to reconsider the possibility of adjusting the exchange rate as a substitute for import restrictions.

3. *Restoring External Stability*

There are probably three major reasons why exchange devaluation has been ruled out as a means of restoring balance of payments equilibrium since general import restrictions were first imposed in 1952. These are: *first*, for income distribution reasons it was not desired to augment the high level of incomes which most primary producers, and especially woolgrowers, continued to enjoy even after the collapse of the Korean boom; *second*, during most of the period in question Australia has been subject to strong inflationary pressures which the higher incomes and costs resulting from devaluation would have intensified, making the Government's task of maintaining internal stability extremely difficult indeed; and *third*, it has long been believed that Australian exporters do not respond to price increases by increasing their output, so that the increased prices, in terms of Australian currency, received as a result of devaluation would not result in a higher volume

5. See D. Cochrane, *ibid.*, p. 157.

6. See, for example, W. M. Corden, "Import Restrictions and Tariffs", published elsewhere in this issue.

of exports and increased earnings of foreign currency. In addition to this assumed inelasticity in the supply of exports, many people have believed that the Australian demand for imports is also inelastic, so that an increase in the Australian price of imported goods would not greatly reduce the volume of imports.

Whatever the merits of these arguments during the past few years, it is doubtful whether they can be taken seriously today. Farm incomes dropped by one-third in 1957-8 (from £535m. to £359m.), and the further substantial fall which may be expected this year will reduce them to well below the pre-Korean level (£321m. in 1948-9), despite the fact that national income has increased to roughly two-and-a-half times its 1948-9 value (from £1,961m. in 1948-9 to £4,710m. in 1957-8). Under these circumstances, equity arguments can hardly be used to oppose an increase in farm incomes such as would result from depreciation of the Australian pound.

Moreover, we have seen that despite the expansionary Budget policy there is, if anything, a deflationary tendency in the economy at present, arising out of the continued fall in export incomes. Devaluation would help to correct this position by increasing demand for domestic production, and its effects on costs would not differ greatly from the effects of other measures that might be taken to reduce imports. Under these circumstances it should not prove difficult for the Government to counteract such inflationary pressures as would be set in motion if the Australian pound were depreciated. The main difficulty arising out of devaluation would probably be that of maintaining a high rate of development, and this problem will be considered in the next section.

The suggestion that the supply of Australia's exports is inelastic with respect to price changes may have had some validity so long as exports consisted almost wholly of primary products, but even under these circumstances the inelasticity has probably been exaggerated. The apparent lack of response by the farmer to price changes is probably due, not to failure to react on his part, but to the relatively long period that needs to elapse before increased investment and changes in production policy can bear fruit.⁷ It may be that increased output of Australian wool resulting from devaluation might adversely influence the price of wool in the world market, but the effect of this on the aggregate earnings of foreign currency is problematical.

In any case, however, as a result of the increased absorption of rural output by the home market on the one hand and the build-up that has occurred in manufacturing capacity on the other, it is no longer true that Australia's export potential is based wholly on primary commodities. One would normally expect a country's exports to be derived from her most efficient industries, whether primary or secondary. In fact certain of Australia's primary-producing export industries, e.g. dairying and dried fruits, are among our most inefficient, judged by costs in relation to world prices, and are only sup-

7. Cf. W. M. Corden, *ibid.*

ported by home-price schemes, subsidies and marketing agreements designed to protect them from the forces of world competition. Many of Australia's manufacturing industries, on the other hand, are extremely efficient by world standards. These industries have been steadily increasing their share of Australia's exports until exports of manufactured and semi-manufactured goods (excluding processed rural products but including such items as iron and steel products, petroleum products, vehicles and machinery, electrical equipment, textiles and chemicals) now exceed £100m. and this year will probably account for something approaching 15 per cent of total exports. During the period of Australia's post-war development these industries, many of which have been established by overseas companies, have been increasing their capacity. Their average costs depend to an important extent on the degree to which their capacity is utilized, and in many cases, for example because of indivisibilities of plant installations, their capacity has outrun Australian demand. This has happened, according to the Department of Trade's Survey of Manufacturing Activity,⁸ in the case of industries producing plant, equipment and machinery; durable and non-durable consumer goods; and building materials. It would obviously be an advantage to these industries if they could utilize their idle capacity by increasing production for export. In many cases they could do this by quoting export prices below the prices prevailing in the home market; given idle capacity, it would pay them to act in this way so long as the export prices they receive cover their variable costs of production and make some contribution to fixed overheads and profits. Action of this kind is described in the language of international trade as dumping, and unfortunately the freedom of Australian manufacturers to behave in this way is restricted by anti-dumping regulations which operate in most of our export markets. The same results could be achieved, however, by devaluation. Given the work that has already been done by manufacturers in getting a foothold in overseas markets, the fillip to export earnings resulting from, say, a 20 per cent devaluation could well be spectacular. Moreover, the existence of idle capacity in Australian manufacturing industry is not only an effective answer to the suggestion that the price elasticity of supply of Australian exports is low; the existence of alternative sources of supply in the home economy makes import replacement a possibility and takes some of the force out of the argument that the Australian demand for imports is also inelastic (although there are certain essential raw materials that so far cannot be produced in Australia, such as petroleum, the demand for which will continue to be highly inelastic).

If exports remain at only £700m. a year, it will not be sufficient to attempt to restore the balance of payments by negative action, such as import restrictions or increased tariffs, designed to operate only on the side of imports. It has been officially suggested that an export income of at least £900m. is necessary if Australian expansion is to keep mov-

8. Commonwealth of Australia, *Survey of Manufacturing Activity in Australia* (April 1958), p. iii.

ing at a reasonable pace.⁹ This implies positive action to stimulate manufacturing exports, and no other policy could produce such an immediate effect as devaluation of the Australian pound. Such a devaluation should be of sufficient magnitude to enable, as a corollary, the elimination of quantitative restrictions on imports. Even if export prices should recover, say to their 1957-8 level, a case for devaluation would remain so long as import restrictions continue to be imposed to protect the balance of payments, although under these circumstances some of the arguments against devaluation that were discussed at the beginning of this section would need to be given greater weight.

4. *Financing Economic Development*

If export prices do not recover and it is necessary, in order to protect our international reserves, to take corrective action to close the balance of payments gap, then irrespective of the means adopted to achieve this purpose there are likely to be difficulties in maintaining the existing high rate of economic development. This is because the elimination of the balance of payments deficit normally implies a reduction in the resources available to the domestic economy. In real terms the volume of imports will be reduced and/or there will be a diversion of home-produced goods into export markets.

This reduction in the flow of supplies available to the home economy could be partly avoided if the adverse trend in the terms of trade was to be reversed, or the capital inflow speeded up, or internal productivity increased. Devaluation might be expected to help in all these directions. The effect of devaluation on the terms of trade is not likely to be very significant, although it might cause some reduction in import prices (expressed in terms of foreign currencies) without affecting the overseas prices of many of our existing exports. Devaluation would reduce the overseas cost of direct investment in Australia, although the subsequent dividend returns would also be lowered in terms of foreign currencies. However, the main effects of devaluation on capital inflow would probably be the added inducement to direct investment that would result from the improved competitive position of Australian industry, and the added strength that would be given to the Australian pound by the weakening of speculative pressures to send capital abroad. The greater utilization of plant capacity, which it has been suggested above is likely to follow devaluation, would be the principal factor tending to raise internal productivity.

Despite the possibility of mitigating circumstances such as these, action to close the balance of payments gap will inevitably result in a loss of resources to the Australian economy. If the resources devoted to economic development are to be maintained in absolute terms (or even maintained at the same proportion of real national income), this implies a reduction in real consumption. Expressed in another way, the elimination of the balance of payments deficit means that it will no longer be possible to finance Australian investment by running down

9. Commonwealth of Australia, *The Australian Economy, 1958* p. 20.

international reserves. This problem would not arise if there were unemployment in the economy after the restoration of balance of payments equilibrium. Increased public investment expenditures, financed say by Treasury Bill issues, would then be an effective means of raising the level of internal activity to full employment. If, however, the economy were already running at full stretch and it is desired to avoid inflation, then action must be taken to step up the flow of savings if the existing level of investment is to be maintained. Under these circumstances the maintenance of a high rate of growth in the Australian economy may be said to depend on the achievement of increased domestic saving. Unfortunately, the task of increasing saving in Australia has been rendered extremely difficult by falling farm incomes, the traditional source of a large proportion of our personal saving.

Whether saving is adequate in relation to investment requirements depends partly on the aggregate volume of funds flowing into the capital market, and partly on the extent to which those funds are efficiently used. While the volume of savings will depend predominantly on the level of income, it is possible to influence the rate of saving at any level of income by providing special incentives to save or by imposing penalties on spending.

Control over hire-purchase activity would provide an obvious method of restricting consumption expenditure in Australia, but any action in this direction is difficult to implement for constitutional reasons. One approach to the problem, which has already been applied on a moderate scale in New South Wales and Victoria, would be to impose an *ad valorem* tax on hire-purchase transactions. Because the demand for hire-purchase finance seems highly inelastic this may not result in any immediate limitation of spending, especially when hire-purchase companies are in a position to make additional finance available to cover the tax. Successful control over hire-purchase transactions almost certainly implies either direct controls over terms of hiring or controls over capital issues.

The main deterrent that can be imposed on private spending is taxation, and to the extent that taxes are not used to finance government spending they may be said to make a direct contribution to the economy's savings. It is clear from Table V that in recent years an overwhelming proportion of public works expenditure, both by the Commonwealth and States, has been financed by taxation. Because they have had access to these "compulsory savings", governments have not found it necessary to make heavy demands on the new savings flowing into the capital market. As was pointed out in the Commonwealth Government's last economic survey,¹⁰ however, a high and progressive income tax structure tends to discourage private saving. In the existing Australian situation there would seem to be strong grounds for experimenting, as India has done, with forms of taxation that will avoid the deterrent effects which highly progressive income taxes are known to have on saving. In particular, consideration might be given to the

10. *The Australian Economy, 1958.*

gradual substitution, in the middle and higher income ranges at least, of a progressive tax on expenditure for the existing income tax.

Several recent institutional developments in the Australian capital market might encourage the growth of savings. These include the establishment of finance companies in Melbourne and Sydney which will operate as discount houses and help to mobilize short-term funds that would otherwise not be available to the capital market; the extension of trading bank activities into the savings bank and unit trust field; the growing importance of the unit trust movement and other attempts by sharebrokers to interest small savers in industrial securities; and the emergence of new forms of fixed-interest securities, such as unsecured debentures and notes and the new Commonwealth special bonds, which pay relatively high rates of interest and are designed to attract income-conscious investors. The restoration of some measure of price stability will doubtless have its effect on personal savings. It will also mean that business savings may be used effectively to finance expansion, instead of being largely absorbed in providing for the replacement of stocks and fixed assets. But although it might be possible to increase private saving by these means, it seems that Australia must continue to rely on government saving, i.e. on taxation, to finance a substantial proportion of her development.

The effective use of savings depends partly on their allocation between the public and private sectors of the economy, and partly on the efficiency with which funds are distributed within each sector. The initial allocation between government and private sectors is inevitably a political decision. In recent years Australian governments have made relatively little demand on the capital market. If the conversion of maturing loans be ignored, new Commonwealth issues have been taken up mainly by banks and other institutional investors, and governments have relied on Commonwealth taxation as a means of financing by far the greater proportion of their public works. Whether this has resulted in a satisfactory allocation of funds between the public and private sectors is a social or political question rather than an economic one, but there is at least a danger in the present system that essential public works may lose their place in the queue to relatively inessential private investment projects.

Within the government sector the allocation of funds is normally determined by the Loan Council, but in practice during recent years the Commonwealth has decided the amount which is to be made available to the States. Commonwealth-State financial relationships continue to provide one of the major and apparently insoluble problems of the Australian economy; it is significant that the Parliamentary Constitution Review Committee was unable to make specific recommendations on this issue. There seems little doubt that State expenditures must meet more stringent tests before they are approved than is the case with the Commonwealth. This is particularly unfortunate in circumstances where the States remain primarily responsible for expenditure on development and social services, and largely explains

Australia's neglect in making adequate provision for housing and essential services, transport, education and hospitals. It is difficult to see how this situation can be remedied, largely because the States have shown no real desire to take effective action to improve their position. Even if uniform income taxation is retained it would be possible for the States to introduce some flexibility into their financial systems by expanding existing taxes or exploiting new fields, e.g. capital taxes or general expenditure taxes of the kind mooted above. It seems that the weakness in State finances is due not so much to lack of revenue sources as to their general unwillingness to impose taxes that might bring them out of line with other States and react unfavourably on their industrial development. It is easier for the States to try to extract additional funds from the Commonwealth than to take action which might adversely affect their development prospects. This probably explains the recent decisions by the Queensland and Victorian Governments to apply for Section 96 grants; it also implies that there is not much point in civil servants and economists searching for additional tax fields for the States to exploit.

Another possible source of inefficiency in the use of funds by the public sector is the competition among States for new industries, particularly by overseas companies. This is not likely to result in industries being established on the best possible terms from the point of view of the Australian economy. Other writers have mentioned the adverse balance of payments effects that certain forms of overseas investment are likely to have.¹¹ Less obvious, perhaps, is the distortion which the inducements held out to a new industry might introduce into the State's public works programme. It has been officially stated that it will cost one State Government £50m. to provide transport, housing, and essential services for new industrial enterprises which have themselves recently announced capital investment programmes of £50m. in the State in question. Obviously government expenditure of this order will affect existing works programmes. While from the individual State's viewpoint such expenditure may be thoroughly justified, there is at least a danger that the cost of undertaking it (which in the last resort is the cost of doing without something else) may not be taken into account fully by a government anxious to establish new industries. This danger is likely to be intensified when several States are competing for a project.

Turning now to the private sector, the major factors distorting the allocation of funds are probably, first, the preferred position which hire-purchase companies have secured in the capital market as a result of the attractive terms they are able to offer; and second, the relative difficulty of securing short-term bank finance as compared with new capital issues and hire-purchase finance.

Despite the growing emphasis on fixed-interest securities, there does not appear to be any significant shortage of risk capital. The

11. See, for example, E. T. Penrose, "Foreign Investment and the Growth of the Firm", *Economic Journal*, June 1956.

recent increase in funds flowing into debentures, notes and deposits has had some effect on ordinary share issues, but the brunt of the onslaught has been borne by Government securities. The greater reliance on fixed interest debt in recent years may go too far and lead to unbalanced capital structures. Recent trends, however, are probably a reflection of the low gearing ratios which existed at the end of the post-war boom, the achievement of stability in the economy following a period of inflation and tax laws which favour long-term borrowing *vis-a-vis* capital raising. Nevertheless, to prevent over-emphasis on fixed-interest debt there would seem to be a strong case for adopting the U.K. practice of not allowing, as a deduction for income tax purposes, interest paid on debentures and other securities to which the public has been invited to subscribe. This would help to ensure that the individual company does not rely too heavily on fixed-interest debt, and it would also counteract the existing bias in the capital market against government borrowing.

Something has been done in recent years to improve the sources of finance available to small or new firms, which traditionally find it difficult to gain access to the capital market. The Industrial Finance Department of the Commonwealth Bank makes long-term loans to small firms and provides hire-purchase finance for the purchase of industrial plant. Some State Governments provide financial assistance, in the form of guaranteed bank loans, to firms that cannot otherwise obtain funds for expansion. More recently, also, specialist private finance institutions have been established in Melbourne and Sydney with the express intention of facilitating industrial development by small firms.

5. *Summary*

This survey suggests that the authorities have been reasonably successful in their efforts to shelter the Australian economy from the adverse external situation. Unless there is a sudden and substantial reversal of recent trends, however, the battleground of economic policy will soon change from the domestic field to the balance of payments; and drastic action, perhaps devaluation of the Australian pound, will be needed in order to restore external equilibrium. In any event it will be necessary to find a method of financing our economic development that does not involve the continued use of our international reserves. The task of making adequate provision for housing and ancillary services, health and education, transport, and industrial development will for demographic and other reasons continue to be a pressing one throughout the next decade. If the impetus to economic expansion is not to be checked it will almost certainly be necessary to increase domestic savings. At the end of 1958 the basic problem of Australian economic policy is to reconcile the requirements of a rapid rate of development with the loss of resources resulting from the substantial deterioration that has occurred in our external position.

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THE NEW ZEALAND ECONOMY, 1957-8

1. Introduction

The course of the New Zealand economy during 1957-8 was influenced by the most serious decline in export prices for over 25 years. The export prices index for the first quarter of 1958 was 17 per cent below both that for the first quarter of 1957 and the average for the years 1954-6. But the inflationary conditions which have existed throughout the post-war period continue. Wages and internal prices are still increasing, there is full employment and the gross national product for the year ended 31st March, 1958, was 5 per cent greater than in the previous year.

The main purpose of this survey is to explain, as far as possible, the recent changes in the principal economic aggregates and to consider the likely changes in the near future. This is a task which could be best accomplished with the aid of an econometric model which takes account of the general interdependence of the variables in the system. The most that can be achieved without such a tool is an explanation of the more direct and obvious causal relations.

2. The National Product

The gross national product (Table I) increased by 5.4 per cent between 1956-7 and 1957-8. Between the same periods the average consumers' price index for the year increased by 2.2 per cent while the average population for the year increased by 2.4 per cent. The real gross national product increased, therefore, by 3.0 per cent and the

TABLE I
Gross National Product, 1947-58

| Year Ended 31 March | Gross National Product (£ millions) | Gross National Product at 1955 Prices (£ millions) | Gross National Product Per Head at 1955 Prices (£) | Percentage Change in Gross National Product Per Head at 1955 Prices |
|------------------------|--|--|---|--|
| 1947 | 425 | 667 | 377 | |
| 1948 | 481 | 723 | 400 | + 6.1 |
| 1949 | 489 | 699 | 379 | - 5.2 |
| 1950 | 552 | 781 | 415 | + 9.5 |
| 1951 | 697 | 913 | 476 | +14.7 |
| 1952 | 722 | 845 | 431 | - 9.5 |
| 1953 | 757 | 858 | 427 | - 0.9 |
| 1954 | 841 | 890 | 432 | + 1.2 |
| 1955 | 930 | 946 | 449 | + 3.9 |
| 1956 | 984 | 978 | 455 | + 1.3 |
| 1957 | 1,026 | 986 | 449 | - 1.3 |
| 1958 | 1,081 | 1,016 | 452 | + 0.7 |

Sources: Official Estimates of National Income
Abstract of Statistics

real gross national product per head by 0·7 per cent. These changes can be compared with an increase of 0·8 per cent in the real gross national product and a decrease of 1·3 per cent in the real gross national product per head between 1955-6 and 1956-7. The real gross national product was greater in 1957-8 than in any previous year. But the real gross national product per head was 5 per cent lower than in 1950-1 and slightly lower than in 1955-6.

Since there has been virtually no unemployment in New Zealand during the post-war period, changes in the real gross national product can be attributed mainly to changes in the terms of trade, changes in the labour force, capital accumulation and technical progress. An estimate of the changes directly caused by changes in the terms of trade is shown in Table II.¹

TABLE II

Analysis of Changes in Real Gross National Product, 1955-8

| Year Ended 31 March | Percentage Change in Real Gross National Product | Percentage Change in Average Terms of Trade for Year | Percentage Change in Real G.N.P. Caused by Change in Terms of Trade | Percentage Change in Real G.N.P. Not Caused by Change in Terms of Trade | Percentage Change in Average Labour Force for Year | Percentage Change in Real G.N.P. per Person Employed Not Caused by Change in Terms of Trade |
|------------------------|--|---|---|---|---|--|
| 1955 | +6·3 | + 2·0 | +0·5 | +5·8 | +2·2 | +3·6 |
| 1956 | +3·4 | + 3·0 | +0·8 | +2·6 | +1·7 | +0·9 |
| 1957 | +0·8 | - 8·0 | -2·2 | +3·0 | +2·0 | +1·0 |
| 1958 | +3·0 | -10·0 | -2·7 | +5·7 | +2·0 | +3·7 |

Sources: Official Estimates of National Income
Abstract of Statistics

This is simply an estimate of the changes which would have occurred as a result of changes in import and export prices if the pattern of production and trade had remained constant. Changes in the terms of trade will, of course, have had some effect on production and trade and, an indirect effect, therefore, on the real gross national product. No allowance has been made for such effects.

The table shows that the 3 per cent increase in the real gross national product between 1956-7 and 1957-8 can be analysed approximately into a 2·7 per cent decrease directly caused by the deterioration in the terms of trade, a 2 per cent increase caused by the increase in the labour force and a 3·7 per cent increase caused by capital accumulation, technical progress and other factors. The figures in the last

1. This estimate has been derived by subtracting from the percentage increase in export prices, multiplied by the ratio of exports to the gross national product in the preceding year, the percentage increase in import prices multiplied by the estimated import content of consumers' goods. The reason for using the import content of consumers' goods as a weight is that the consumers' price index has been used for deflating the gross national product. The estimated import content of consumers' goods (0·27) was derived by the government statistician from the 1952-3 inter-industry study.

column of the table suggest that capital accumulation and technical progress have, over the last four years, tended to cause an average rate of growth of about 2 per cent per annum in the real gross national product per person employed. Factors which have contributed to the fluctuations about this average rate of growth are changes in weather conditions, the number of hours overtime worked and the distribution of the labour force between industries.

3. *Personal Consumption*

Personal expenditure on consumers' goods and services (Table III) increased by 7·8 per cent between 1956-7 and 1957-8 as compared with 4·2 per cent between 1955-6 and 1956-7. The corresponding increases at constant prices were 5·5 per cent and 0·6 per cent respectively. Real personal consumption per head after decreasing by 1·3 per cent between 1955-6 and 1956-7 increased by 3·0 per cent between 1956-7 and 1957-8 and was greater in 1957-8 than in any previous year.

Personal consumption was in 1957-8 equal to 67 per cent of the

TABLE III
*Personal Expenditure on Consumers' Goods
and Services, 1949-58*

| Year Ended 31 March | Personal Expenditure on Consumers' Goods and Services (£ millions) | Personal Consumption at 1955 Prices (£ millions) | Personal Consumption per Head at 1955 Prices (£) | Personal Consumption as Percentage of Gross National Product | Personal Consumption as Percentage of Disposable Income |
|---------------------|--|--|--|--|---|
| 1949 | 340 | 486 | 264 | 70 | 94 |
| 1950 | 359 | 508 | 270 | 65 | 86 |
| 1951 | 416 | 545 | 284 | 60 | 78 |
| 1952 | 475 | 556 | 284 | 66 | 90 |
| 1953 | 471 | 534 | 266 | 62 | 84 |
| 1954 | 537 | 568 | 276 | 64 | 85 |
| 1955 | 614 | 625 | 297 | 66 | 89 |
| 1956 | 649 | 645 | 300 | 66 | 90 |
| 1957 | 676 | 649 | 296 | 66 | 89 |
| 1958 | 729 | 685 | 305 | 67 | 87 |

Sources: Official Estimates of National Income Abstract of Statistics

gross national product and 87 per cent of disposable income.² The corresponding average percentages over the last 10 years were 65 and 87 per cent respectively. But there has, as Table III shows, been considerable variation about these averages. This variation appears to have been caused mainly by changes in the factorial distribution of income and the rate of growth of non-wage income.

Over 97 per cent of the variance of real personal consumption over the last ten years can be explained by a linear function of current real disposable wage income (including pensions) and current and lagged

2. Disposable income is here defined as private income less direct taxation less payments into the primary products stabilization accounts.

real disposable non-wage income.³ This function assumes a zero marginal propensity to save out of disposable wage income. Attempts to obtain a plausible estimate of this parameter from available time series have, so far, been unsuccessful.⁴ But, in view of the comparatively high social security benefits in New Zealand, the assumption that the marginal propensity to save out of disposable wage income is approximately zero is not unrealistic. Subject to this assumption the estimated marginal propensities to consume out of current and lagged disposable non-wage income are each equal to 0.17.

TABLE IV

Estimated and Actual Personal Expenditure on Consumers' Goods and Services at 1955 Prices, 1949-58
(£ millions)

| Year Ended 31 March | Real Disposable Wage Income | Real Disposable Non-Wage Income | Personal Expenditure on Consumers' Goods and Services at 1955 Prices | | |
|------------------------|-----------------------------------|--|---|--------|-------------------------------|
| | | | Estimated from Data in Previous Columns | Actual | Deviation from Estimate |
| 1949 | 350 | 164 | 477 | 486 | + 9 |
| 1950 | 382 | 211 | 513 | 508 | - 5 |
| 1951 | 391 | 303 | 545 | 545 | 0 |
| 1952 | 412 | 205 | 565 | 556 | - 9 |
| 1953 | 416 | 218 | 555 | 534 | -21 |
| 1954 | 430 | 238 | 575 | 568 | - 7 |
| 1955 | 461 | 236 | 609 | 625 | +16 |
| 1956 | 488 | 228 | 634 | 645 | +11 |
| 1957 | 493 | 240 | 640 | 649 | + 9 |
| 1958 | 541 ¹ | 244 ² | 690 | 685 | - 5 |

a. approximate

Sources: Official Estimates of National Income
Abstract of Statistics
Report on Income and Income-Tax Statistics

The deviations of personal consumption at 1955 prices from estimates obtained from the consumption function are shown in Table IV. Personal consumption in 1957-8 differed from the estimate by less than 1 per cent. The 6 per cent increase in real personal consumption

$$3. C(t) = 67 + W(t) + 0.17N(t) + 0.17N(t-1)$$

(4) (0.12) (0.12)

$$R^2 = 0.97$$

$C(t)$ = personal consumption in year t at 1955 prices

$W(t)$ = real disposable wage income (including pensions) in year t

$N(t)$ = real disposable non-wage income in year t

R^2 = proportion of variance of $C(t)$ explained.

The equation was estimated by least squares regression subject to the restriction that the coefficient of $W(t)$ is not greater than unity. The figures in brackets are the estimated standard errors. Since $N(t)$ is not predetermined the estimates will be to some extent biased. But, in view of the small residual variance, this bias is likely to be small.

4. The estimation of the above equation by unrestricted least squares regression gave an estimated marginal propensity to consume out of disposable wage income of 1.05.

between 1956-7 and 1957-8 appears to have been caused mainly by an extraordinary large increase in real disposable wage income. This in turn was partly caused by a large reduction in direct taxation payable by wage earners during the latter year.

4. *Private Capital Formation*

Gross private capital formation (Table V), after having decreased for two successive years, increased by 18 per cent between 1956-7 and 1957-8. The ratio of gross private capital formation to the gross national product was, nevertheless, only 0.14 as compared with an average ratio of 0.15 over the last nine years. But Table V shows that this ratio has varied considerably and that the variation has been caused mainly by

TABLE V
Gross Private Capital Formation, 1950-8

| Year Ended 31 Mar. | Gross Private Fixed Capital Formation | | | Gross Private Fixed Capital Formation as Percentage of G.N.P. | Change in Stocks (£m.) | Gross Private Capital Formation (£m.) | Gross Private Capital Formation as Percentage of G.N.P. |
|--------------------|---------------------------------------|-------------|-------------|---|------------------------|---------------------------------------|---|
| | Buildings (£m.) | Other (£m.) | Total (£m.) | | | | |
| 1950 | 28 | 29 | 57 | 10 | +14 | 71 | 13 |
| 1951 | 37 | 37 | 74 | 11 | +49 | 123 | 18 |
| 1952 | 44 | 47 | 91 | 13 | +37 | 128 | 18 |
| 1953 | 42 | 56 | 98 | 13 | +13 | 111 | 15 |
| 1954 | 51 | 53 | 104 | 12 | -21 | 83 | 10 |
| 1955 | 68 | 62 | 130 | 14 | +29 | 159 | 17 |
| 1956 | 66 | 62 | 128 | 13 | +19 | 147 | 15 |
| 1957 | 64 | 55 | 120 | 12 | + 8 | 130 | 13 |
| 1958 | 76 | 61 | 137 | 13 | +16 | 153 | 14 |

Sources: Official Estimates of National Income
Economic Survey

stock changes. The ratio of gross private fixed capital formation to the gross national product was 0.13 as compared with an average ratio of 0.12 over the last nine years.

There are two reasons for the comparatively large variation in stock changes. First, no adjustment has been made for stock appreciation. The figure for the change in stocks in any year is the change in the value of stocks between the beginning and the end of the year rather than the change in volume valued at current prices. Secondly, because of continuous full employment, it is mainly through stock changes that annual variations in aggregate supply and demand have been equated. There are forces which have, nevertheless, tended to preserve a long-run relation between stocks and output. A low and decreasing level of stocks results in more rapid inflation and a redistribution of income from wage earners to profit receivers. This leads, as has been shown, to a decrease in personal consumption which tends to check the decline in stocks.

Fixed capital formation, throughout the post-war period, has been influenced by various direct controls. The most important of these are

import restrictions, building controls and control over capital issues. It has been shown that a high proportion of the variance of fixed capital formation in several important sectors of the economy can, nevertheless, be explained by market forces.⁵ This is true also of aggregate fixed capital formation. Over 70 per cent of the variance of gross private fixed capital formation (excluding housing) at constant prices over the period of 1950-7 can be explained by a linear function of lagged disposable non-wage, non-farm income deflated by the price of capital goods.⁶ The deviations from the estimates obtained from this function are shown in Table VI.

TABLE VI

*Estimated and Actual Gross Private Fixed Capital Formation
(Excluding Housing) at 1955-6 Prices, 1950-8*
(£ millions)

| Year Ended 31 March | Disposable Non-Farm Non- Wage Income Deflated by Capital Goods Price Index | Gross Private Fixed Capital Formation (Excluding Housing) at 1955-6 Prices | | |
|------------------------|---|---|--------|-------------------------------|
| | | Estimated from Data in Previous Column | Actual | Deviation from Estimate |
| 1949 | 87 | | | |
| 1950 | 107 | 54 | 53 | - 1 |
| 1951 | 126 | 64 | 63 | - 1 |
| 1952 | 124 | 74 | 68 | - 6 |
| 1953 | 110 | 73 | 70 | - 3 |
| 1954 | 131 | 66 | 72 | + 6 |
| 1955 | 138 | 76 | 86 | +10 |
| 1956 | 137 | 80 | 82 | + 2 |
| 1957 | 142 | 79 | 73 | - 6 |
| 1958 | | 82 | 82 | 0 |

Sources: Official Estimates of National Income
Economic Survey
A. D. Brownlie, *op. cit.*

Following the removal of building controls in December 1956 there was an extraordinarily large increase in private expenditure on buildings other than housing. It is estimated that this class of investment increased by at least £7 million or 35 per cent between 1956-7 and 1957-8. The investment function, nevertheless, predicted the volume of private fixed capital formation (excluding housing) for the latter year without error. The stimulus to investment provided by the re-

5. See A. D. Brownlie, "Private Investment in New Zealand 1950-56," to be published in the next issue of this journal.

$$6. I(t) = 11 + 0.50P(t-1) \\ (2) (0.14)$$

$$R^2 = 0.70$$

$I(t)$ = gross private fixed capital formation (excluding housing)

$P(t)$ = disposable non-wage non-farm income deflated by the price of capital goods in year t .

The above equation was estimated by least squares regression from data for the years 1950-7. The year 1957-8 was omitted from the sample because of the removal of building controls in December 1956.

removal of building controls must have been offset, therefore, by the restraining influence of some other factor.

It is possible that the liquidity of the economy has now been reduced to a level where monetary policy is having a significant influence on investment. During each of the years 1956-7 and 1957-8 the ratio of the average volume of money to the gross national product was less than in any other post-war year. And, in both years, the volume of private fixed capital formation (excluding housing) was below the expected level based on the investment function (provided that some allowance is made for the effect of the removal of building controls on investment in the latter year). Moreover, these negative deviations cannot like those in the early post-war years be attributed to the severity of direct controls. These facts cannot, of course, be regarded as strong evidence that the volume of money is now having a significant restraining influence on private investment. But they do, at least, show that such a hypothesis is not refuted by the statistics.

5. *The Balance of Payments*

The deficit in the current balance of payments (Table VII) was £50 million in 1957-8 as compared with £19 million in 1956-7. The change was caused mainly by a 14 per cent increase in payments for imports, this being made up of a 5 per cent increase in prices and a 9 per cent increase in volume. Most of the increase in the volume of imports can be explained as the result of increases of 6 per cent in the volume of personal consumption and 9 per cent in the volume of private fixed capital formation.

A new system of import licensing was introduced as from 1st January 1958. But because of the time lag between the ordering and arrival of imports and the granting of excess licences to cover existing contracts this had little effect on payments for imports during the first 6 months of 1958.

Between the first quarters of 1957 and 1958 the index of export prices decreased by 17 per cent. The decreases in prices of individual

TABLE VII
Net Overseas Exchange Transactions, 1956-8
(£ millions)

| | Year Ended 31 March | | | Year Ended 30 June | |
|---|------------------------|------|------|-----------------------|------|
| | 1956 | 1957 | 1958 | 1957 | 1958 |
| 1. Exports | 273 | 275 | 274 | 286 | 257 |
| 2. Other Receipts | 38 | 46 | 44 | 45 | 55 |
| 3. Government Payments | 40 | 44 | 46 | 44 | 52 |
| 4. Private Imports | 242 | 234 | 266 | 238 | 271 |
| 5. Other Payments | 45 | 42 | 45 | 42 | 49 |
| 6. Balance of Overseas Transactions | -16 | 1 | -40 | 7 | -60 |
| 7. Current Balance of Payments | -31 | -19 | -50 | — | — |

Sources: Reserve Bank Bulletin
Official Estimates of National Income

commodities were 22 per cent for butter, 30 per cent for cheese, 3 per cent for meat and 23 per cent for wool. The principal cause of the decline in wool prices was, no doubt, the United States recession which led to a decrease in the world consumption of raw wool. The decrease in the price of dairy products was caused mainly by an increase in the production of these products in Europe and a resulting increase in supplies to the United Kingdom market.

Most of the decrease in export prices occurred during the last quarter of 1957 and the first quarter of 1958. There was, moreover, a substantial increase in prices during the early months of 1957. For this reason the export prices index was only 5 per cent lower, on average, for the year ended 31st March, 1958, than for the previous year while receipts from exports were approximately equal in the two years. Receipts from exports during the year ended 30th June, 1958, were 10 per cent lower, however, than in the previous year.

6. *Wages and Prices*

We have seen that one of the consequences of the substantial increase in aggregate demand between 1956-7 and 1957-8 was an increase of 9 per cent in the volume of imports. But, in view of the imperfect substitutability between imports and home produced goods and the comparatively fixed supply of the latter, we should expect, as a further consequence, an increase in the rate of inflation. Table VIII shows that there was in fact a tendency for this to occur.

TABLE VIII

Wages and Prices

(percentage increase since preceding year)

| Year Ended 31 March | Award Wages (Adult Males) | Salary and Wage Payments per Person Employed | Import Prices | Export Prices | Consumers' Prices | Consumers' Prices (Excluding Prices of Fruit Vegetables and Eggs) |
|------------------------|------------------------------|--|------------------|------------------|----------------------|---|
| 1955 | +4.8 | +9.4 | -1.5 | +0.5 | +4.0 | +5.5 |
| 1956 | +2.8 | +6.5 | 0.0 | +2.5 | +2.3 | +2.3 |
| 1957 | +3.6 | +3.7 | +3.5 | -4.2 | +3.5 | +1.9 |
| 1958 | +3.0 | +6.5 | +5.5 | -4.7 | +2.2 | +3.6 |

Sources: Abstract of Statistics
Official Estimates of National Income

Average salary and wage payments per person employed increased by 6.5 per cent between 1956-7 and 1957-8 as compared with 3.7 per cent between 1955-6 and 1956-7. This acceleration of wage payments was not a result of changes in award wages since these increased by only 3 per cent between 1956-7 and 1957-8 as compared with 3.6 per cent between 1955-6 and 1956-7. Nor can a change of this magnitude be accounted for by changes in overtime payments. It appears, therefore, that there was an increase in the competitive bidding up of wage rates by employers.

The effect of variations in aggregate demand on prices has been partly obscured by price variations resulting from other causes. The prices of commodities in the fruit, vegetables and egg group in particular have been greatly affected by changes in weather conditions and other factors affecting their supply. Evidence of the effect of variations in aggregate demand on consumers' prices is provided, however, by an index of the prices of all other consumers' goods. This index increased by 3.6 per cent between 1956-7 and 1957-8 as compared with 1.9 per cent between 1955-6 and 1956-7. This change can be only partly explained by the greater rise in import prices between 1956-7 and 1957-8. The higher level of aggregate demand in the latter year appears, therefore, to have had some effect on prices.

7. Government Finance

Government receipts from direct taxation (Table IX) were £16 millions lower in 1957-8 than in 1956-7. This decrease was the result of a rebate of £100 on all personal assessments relating to income for the latter year. Since most of the benefit of this rebate accrued to salary and wage earners it must have had an important influence on consumption. By using the consumption function discussed in Section 3 it has been estimated that £12 to £16 millions of the increase in personal consumption between 1956-7 and 1957-8 was caused by the decrease in direct taxation. But the increase in personal consumption at factor cost was checked by an increase of about £7 millions in indirect taxes, less subsidies.

There was an additional increase of about £11 million in aggregate demand as a result of increased government expenditure on goods and

TABLE IX
Government Finance, 1954-8
(£ millions)

| | Year Ended 31 March | | | | |
|--|---------------------|------|------|------|------------------|
| | 1954 | 1955 | 1956 | 1957 | 1958 |
| 1. Direct Taxes | 141 | 155 | 160 | 169 | 153 |
| 2. Indirect Taxes | 66 | 80 | 85 | 83 | 91 |
| 3. Trading Income | 18 | 20 | 21 | 21 | 21 |
| 4. Current Revenue | 225 | 255 | 266 | 273 | 265 |
| 5. Current Expenditure on Goods and Services | 91 | 92 | 101 | 109 | 114 ¹ |
| 6. Transfers | 86 | 95 | 99 | 105 | 111 ¹ |
| 7. Subsidies | 15 | 13 | 12 | 13 | 14 |
| 8. Revenue Balance | 33 | 55 | 54 | 46 | 26 |
| 9. Capital Expenditure | 57 | 59 | 67 | 72 | 72 |
| 10. Net Borrowing | 24 | 4 | 13 | 26 | 46 |
| 11. Overall Cash Surplus | 7 | 18 | -11 | -4 | -22 |

¹ Approximate

Sources: Official Estimates of National Income
Abstract of Statistics
Budgets

services and transfer payments. Finally, there was in 1957-8 an overall cash deficit of £22 millions in the public account, and this may, through its effect on the volume of money, have had a significant effect on private spending. It appears, taking into account all of the above changes, that at least £16 million of the increase in aggregate demand for goods and services at factor cost between 1956-7 and 1957-8 can be attributed to government finance.

It is officially estimated that receipts from direct taxation will be about £33 millions greater in 1958-9 than in 1957-8. As a result of this increase personal consumption will probably tend to decrease by £15 to £25 millions. Personal consumption at factor cost will tend to decrease further as a result of an increase of about £8 millions in indirect taxes less subsidies, but increase as a result of an increase of about £10 millions in social security benefits and a payment of £5 millions to support the guaranteed price for dairy products. Finally, it is estimated that government expenditure on goods and services will increase by about £5 millions. As a result of all of the above changes aggregate demand for goods and services at factor cost will probably tend to decrease by £5 to £15 millions.

8. *Monetary Changes*

The average supply of money (Table X) was, in spite of the decline in the overseas assets of the banking system, 3 per cent greater in 1957-8 than in 1956-7. The increase was caused partly by an increase in trading bank advances and partly by an increase in government indebtedness to the Reserve Bank. There was a decrease, however, in the ratio of the average supply of money to the gross national product, and the ratio was lower in 1957-8 than in any other post-war year. The close inverse relation between this ratio and the yield on long-term government securities (Table X) provides evidence of the effect of the reduction in liquidity on the general level of interest rates.

There are good *a priori* reasons for believing that the increase in interest rates which has occurred during the last few years has tended to discourage private spending to some extent. But whether or not this effect is sufficiently strong to be of practical importance is as yet uncertain.

9. *Prospects for 1958-9*

We are now half-way through the year ending March 1959. Assuming that the average level of export prices during the next six months does not differ much from the present level receipts from exports will probably be £240 to £260 millions in 1958-9 as compared with £274 millions in 1957-8. Payments for private imports will probably be £210 to £230 millions as compared with £266 millions in 1957-8 and the current balance of payments deficit £20 to £40 millions as compared with £50 millions in 1957-8.

Assuming that neither import nor export prices change much during the next six months, the average terms of trade will be 10 to 15

TABLE X
Money Supply and Security Yields

| Year Ended 31 March | Average Money Supply (£ millions) | Average Money Supply as Percentage of Gross National Product | Average Yield on Long Term Government Securities |
|------------------------|---|--|---|
| 1950 | 214.1 | 38.8 | 3.00 |
| 1951 | 243.1 | 34.9 | 3.06 |
| 1952 | 267.3 | 37.0 | 3.26 |
| 1953 | 256.2 | 33.9 | 3.95 |
| 1954 | 288.7 | 34.3 | 3.99 |
| 1955 | 312.5 | 33.7 | 4.03 |
| 1956 | 318.5 | 32.5 | 4.25 |
| 1957 | 318.8 | 31.1 | 4.72 |
| 1958 | 328.6 | 30.4 | 4.87 |

Sources: Reserve Bank Bulletin
Abstract of Statistics

per cent lower in 1958-9 than in 1957-8 and this change will tend to reduce the real gross national product by 2 to 4 per cent. This tendency will be roughly offset, however, by the growth of the labour force, capital accumulation and technical progress. The real gross national product will probably be about the same in 1958-9, therefore, as in 1957-8. But, because of a decrease in net overseas borrowing, the volume of goods and services available to meet private and government demands could be up to £20 millions less than in 1957-8.

It has been shown that aggregate demand will probably tend to decrease by £5 to £15 millions as a result of government finance. But there will, on the other hand, be a tendency for aggregate demand to increase as a result of a change in the distribution of income. Under the above assumptions concerning export prices deflated farm income will probably be £10 to £30 millions lower and deflated non-farm income £10 to £30 millions higher in 1958-9 than in 1957-8. Because of a very low marginal propensity to consume (estimated to be 0.1 to 0.4) out of current disposable farm income this change in the distribution of income will probably increase aggregate demand by an amount sufficient to roughly offset any decrease resulting from government finance. Deflated disposable non-wage, non-farm income was approximately the same in 1957-8 as in 1956-7, so that the volume of gross fixed private capital formation will probably be about the same in 1958-9 as in 1957-8.

It appears from the above analysis that aggregate demand at constant prices will be not much different in 1958-9 from what it was in 1957-8, but that the volume of goods and services available to satisfy this demand will be slightly smaller. The upward trend in wages and prices and the state of full employment can be expected, therefore, to continue.

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THE VARIED ROLE OF CENTRAL BANKS*

1. Introduction

One of the most popular activities just now among economists in many countries is to undertake a re-examination of monetary policy. This applies to the objectives to be aimed at, to the methods to be used, and to the results that are to be expected. The burst of enthusiasm which followed the revival of monetary techniques in the United States of America, United Kingdom and elsewhere, in 1951 and after, has given way to a more sober balance of opinion on the subject. Those who were sceptical from the beginning may feel that their scepticism was well justified. The enthusiasts are perhaps still confident but not quite so certain of themselves. There are those who see little chance of monetary techniques, whether of the orthodox variety or newly devised, being allowed to work effectively, because of inhibitions in the minds of politicians concerning anything which looks like interfering with the Welfare State. This is in marked contrast to the time when, shortly after the first world war, a crop of new central banks appeared, prompted by faith in the power of a central bank to stabilize the price level and maintain convertibility of the currency. Within a few years came the great depression. It was not long before convertibility of most currencies came to an end; moreover, there was a re-assessment of the importance of convertibility relative to other economic objectives.

Then came a second crop of new central banks in the middle 'thirties, built on the old pattern but with a new mission in life—to establish a promised land where the goal of endeavour, the *summum bonum*, was expressed in the phrase "full employment". With the help of wars and rumours of wars, that goal has certainly been achieved—achieved too well, as troubles have come from over-full employment rather than the opposite.

Now, in 1958, the questions are being asked:

Is it so true, after all, that full employment can always be assured, that anything more serious than a mild recession cannot happen again?

Have not restrictive monetary measures been applied and yet spending and prices keep on rising?

And when monetary measures have appeared to be successful in restraining inflation, have they not done more harm than good by slowing down the rate of growth—is not a good rate of growth more important than price stability?

Is not monetary policy too indiscriminate in its effects, and in particular is it not too harsh on the "small man"?

Is not the banking system becoming relatively less important compared with non-banking financial institutions and the State. Do we

* Presidential Address, Section G., Adelaide Meeting of the Australian and New Zealand Association for the Advancement of Science, August 1958. The author is Economic Adviser to the Reserve Bank of New Zealand. Any views expressed are those of the author and are not necessarily those of the Reserve Bank of New Zealand.

not need to look more to these other institutions and to fiscal policy, if we are to achieve approved economic objectives?

And are not the old monetary techniques unsuitable now anyway, and in need of replacement by new ones?

2. *Central Banks in Under-developed Countries*

While all this heart-searching has been going on, with many learned books and articles being written on the subject, and with the Radcliffe Committee deliberating in London, more new central banks are being set up in under-developed countries. They are not waiting for economists to agree on what central banks can be expected to achieve when they operate in developed economies and established money markets (why should they?!). Nor are they waiting for anyone to formulate a clear philosophy and programme for central banks in economies such as theirs. Parallel with the progressive dismantling of the old colonial system there has been a strong urge for the newly-independent countries to set up new central banks. It is true that financial independence naturally goes with political independence, and some new financial institutions are inevitable. A central bank, especially if it has a brand new building, can be an appropriate symbol of maturity and independence. Can it be anything more than that—can it establish itself in a position of influence within the economy and within Government policy-making circles? If so, how? Are the lessons learned in more developed countries of any use, or are they irrelevant?

One thing is certain—the orthodox techniques of central banking do not apply in such countries. They were devised for a fully monetised economy, with developed institutions in banking, the money market, and the capital market, with economic incentives and private enterprise fully operating. Central bank actions were based on the fact that changes in the marginal availability and cost of short-term funds were powerful influences, and that means were available, through bank liquidity and short-term interest rates, to bring about those changes that appeared desirable.

These conditions scarcely exist in under-developed countries, and I need do no more than mention the principal differences. The under-developed countries have a peasant economy, with 60 to 80 per cent of the population living and working on small holdings, many of them merely tenant farmers and paying 50 per cent or more of their crops to the landlord as rent; there are large non-monetised sectors; currency forms a high proportion of money supply (in India it is two-thirds); the money supply is only 20 per cent or less of national income; the overdraft system and the cheque system are hardly known outside the main cities; there is a lack of entrepreneurs; and there is the vicious circle of low incomes, low productivity, low savings (only about 5 per cent of national income) and a low level of investment. The principal banks are often branches of foreign institutions concerned primarily with external trade, and having few if any branches outside the main ports or commercial centres; bank advances are only between $2\frac{1}{2}$ and

10 per cent of national income, compared with about 16 per cent in New Zealand. Moreover, many non-economic factors influence private economic activity, as is described by Zinkin:

“The price of development is high; a society which wishes to develop must be prepared to put development in the very forefront of its priorities. The people must at least be willing to replace the generosity of ceremony and festival by skimping thrift, to exchange the pleasure of lying on a cot in the shade for back-breaking work, to buy savings bonds and share certificates instead of adorning their wives. . . . In under-developed societies this may well mean turning society upside down. . . . Asia’s difficulty is . . . that its values give a low place to economics and change and making money, a high place to stability, saintliness and power. . . . They find it difficult to settle down to the long haul of sacrifice and work and acceptance of unpleasant change that development demands. They are too easily diverted. They buy arms instead of building dams; . . . they choose showy schemes rather than profitable ones; their rich men, like Arab oil-kings, buy Cadillacs instead of irrigating their land.”

What can a central bank do in this environment? Open market operations in the orthodox sense may be impracticable, bank rate in the usual sense has little meaning; hire purchase is almost unknown; the banking system does not impinge on the lives of the great majority of the population; and there are many social practices and religious ideas which impede the development of monetary and credit procedures. For example, because of lack of a proper system of land titles it may be impossible to use land as security for loans to working farmers, most of whom are only tenants anyway. Central banking is therefore not merely a matter of establishing some rules for commercial banks or setting up machinery for central banking operations. There are many social and administrative changes also required in spheres other than banking, most of which require Government action.

It is of course difficult to generalize about a number of countries, some of which are large enough to have regional differences within their borders; but there are some lines of responsibility for central banks in under-developed countries which stand out clearly:

1. Concentrate on providing (or ensuring that other people provide) basic banking facilities in areas where they are non-existent or inadequate. For example, the State Bank of India—the nationalized version of the Imperial Bank of India—was required by statute to open 400 new branches within five years of its re-organization.
2. Encourage the banking habit—something that requires gradual education and probably cannot expand faster than literacy permits. It seems a pity that the Government of Ceylon should introduce a tax on bank debits, even though in Ceylon the banking habit is much further developed than in most other Asian countries.

3. Open a wider and speedier network of remittance facilities throughout the country.
4. Promote improved storage and warehousing facilities so that loans against the security of crops can be simplified.
5. Act as midwife at the birth of co-operative societies, with a parallel system of co-operative credit institutions, backed in the last resort by rediscount facilities at the central bank.
6. Regulate and inspect the indigenous banks to ensure their efficiency and integrity.
7. Regulate the private money-lenders, and squeeze them out of existence not by legislation but by providing better and cheaper credit facilities. Some method of scaling down accumulated debts may also be practicable.

In this context, the All-India Rural Credit Survey is most enlightening. It found, among many other things, that 47 per cent of all borrowing by cultivators was for meeting family expenses and basic needs. These loans were mainly from money-lenders, landlords, merchants, or relatives. In a table showing sources of agricultural credit in India, Japan and Thailand, commercial banks were not even mentioned.

It is clear that in under-developed countries the role of central banks is not to any great extent a restrictive one. It is more likely to be involved in *expanding* the scope of commercial banking and co-operative credit, ensuring that facilities are more widely available and used, and that the advantages of a market economy are achieved. Already there are new banks and specialized credit institutions growing up, often with the encouragement and backing of the central bank; but compared with the large rural population their task is just beginning. Only a small proportion of farmers have so far had the benefit of their improved lending facilities.

In these circumstances a tendency for general over-expansion of bank credit to the private sector does not exist as it does in more developed countries. Bank advances are small relative to national income, and tend to be confined to financing commerce, especially external trade. The Annual Report for 1957 of the Central Bank of Ceylon showed that the purposes of commercial bank credit, as at September 1956 were:

| | |
|-----------------------------|--------------|
| Export Trade | 45 per cent |
| Other Commerce | 30 per cent |
| Finance | 10+ per cent |
| Agriculture and Industry .. | 10— per cent |

In these circumstances, too, the idea which is widely held in more developed countries—that commercial banks should not provide long-term finance for fixed capital purposes—is much less appropriate. There is so little in the way of a capital market, and so great a need for capital, that the arguments in favour of banks participating in this

kind of finance are relatively strong. In India a Re-finance Corporation is being formed so that any bank which becomes financially embarrassed through "lending long" can restore its liquidity by a re-discounting process at a special institution financed by the Central Bank, some of the commercial banks, and the Government.

M. Zolotas, Governor of the Bank of Greece, in a speech last February, went so far as to suggest that in under-developed countries commercial banks "should not merely wait for applications from businessmen in order to finance productive purposes, but they should be so organized that when they find that businessmen show no interest in establishing or expanding productive enterprises, they may effectively suggest and recommend the establishment, modernization or merger of business and even, if need be, participate indirectly in productive enterprises". This question of banks "lending long" is a well-worn subject. I express no specific opinion here on one side or the other, but suggest that here is a case in which the rules applying to banking in developed capital markets are not necessarily applicable in different environments, where there may still be scope for commercial banks to be adventurous and adaptable.

The Public Sector: The danger of inflation in under-developed countries comes not so much from the private as from the public sector. The urge to economic development, and the various development plans which arise as a result, usually require more capital than is available from current saving or foreign loans, and the almost inevitable result is that the gap is filled by Government borrowing on a large scale from the central bank. It is often difficult for a central bank to resist. It may be as keen as anybody on economic development; it may have a statutory duty to assist in financing it; its economists may have helped to work out the development programme. In any case it is often argued that a limited amount of "deficit financing" would not lead to inflation because there are under-employed resources to be activated and non-monetised sectors to be monetised. That *may* be so (it is arguable) and a central bank in an under-developed country may well find itself lending for development purposes to an extent that would not be appropriate elsewhere; but experience has shown that inflation is still a danger, and the central bank has the difficult task of estimating how much deficit financing for development is "safe".

Central banks do *not* provide an easy means of speeding up the rate of economic development. That will inevitably be a slow, very slow process. As Mr. Iengar, Governor of the Reserve Bank of India, said at the 1957 meeting of Governors of the International Monetary Fund: "At the end of the first five-year plan (April 1956) the per capita income in India per year was \$50. And all that is contemplated by the second plan is to raise it to about \$60 in five years. In about 20 years from now all that we are hoping to achieve is a per capita income of \$100 a year."

In respect of some of the newly-independent countries which have, or are planning to have, a brand new central bank, one is sometimes

inclined to ask, "Is your central bank really necessary?" From Singapore—admittedly a very special case—the official answer has been "No"; but elsewhere (e.g. in Ghana, Nigeria, West Indies, Malaya) there has been no reluctance to proceed with the launching of a new institution. It can reasonably be assumed that those responsible for the launching and subsequent management are well aware that the environment the new banks are working in is unlike London. In time they may gradually develop monetary techniques suitable to their needs, but it will be a slow process and they will be developing a form of central banking for which new text books will have to be written. It has been said that it takes twenty years for a central bank to become established. If so—and there is clearly some truth in that generalization—it is no condemnation of the new central banks if it should seem that they are established ahead of need. Each central bank has to work out its own techniques and ideas, sometimes by trial and error, gathering experience as it goes. We wish them well.

One of their greatest needs will be to find staff. Men experienced in banking and administration, and familiar with the ideas and techniques of central banking, are rare in under-developed countries not long out of the status of dependent territories. It is not surprising that they are looking to older established central banks to provide some of the key members of their staff; and as they naturally want to have their own people take over full responsibility as soon as possible, the question of staff training looms large. Technical assistance to the under-developed countries has taken many forms, and it is only proper that central banking should be included. Last year, on the initiative of the Commonwealth Bank, there was held in Sydney the first of what will probably be a series of staff training courses for central banks. The 18 course members came from 14 central banks, mainly in South-East Asian countries, but including England, South Africa, Japan, Australia and New Zealand. For three months they lived and studied together, working through a syllabus covering every aspect of central banking. There was only passing reference to the London money market, and a strong emphasis on the situation facing a central bank in an under-developed country. Visiting specialists came from overseas as well as from within Australia, and the Commonwealth Bank Staff gave generous help. A second course on similar lines is being held in Sydney this year. In this way a contribution is being made to goodwill between the countries of this part of the world, and to understanding of the varied role of central banks.

3. *Central Banks in More Developed Countries*

It is not only in the under-developed countries that the process of experiment and adaptation is going on among central banks. We must look now at the older established central banks in the more developed countries. No two are the same in structure or in methods; in fact the variety of monetary techniques now being used is large and increasing all the time as central banks seek better methods of achieving their

objectives. Central bank techniques were never perfect anyway, and with changing conditions and often a sense of dissatisfaction with past results there is a strong urge to try new ways. Meanwhile the academic economists join in the process of re-appraisal of monetary policy, with this difference that for them the process is not as agonizing as it is for those responsible for making policy decisions. The process has been made more complicated, but also more interesting, by the recent appearance of recessions and greater unemployment in many countries, a contrast with the experience of most of the past twenty years. To central banks which have had so many years in which to study the art of leaning against an inflationary wind, a change in the direction of the wind is likely to leave them flat on their face unless their meteorological services are very efficient.

I mentioned earlier some of the reasons often stated for believing that monetary policy—and therefore central banking too—may be a diminishing influence in a modern economy. I want to look at each of these in turn, not with a view to proving them all wrong, not in a mood of indignant self-assertion on behalf of central banks, but hoping to clarify the issues a little and to see how the central banks concerned might adapt themselves to the situation of the future.

The Clash of Growth and Stability. In many central bank statutes, it appears that the various goals of economic policy—price stability, full employment, convertibility of currencies, economic growth and development—are presumed to be fully consistent with one another, and therefore a central bank can reasonably be required to pursue all of them simultaneously, and can be blamed if it does not succeed. One can always hope that no serious conflict will arise between these objectives, because it is not unreasonable to believe that there *could* be a situation of equilibrium where prices are steady, unemployment no greater than would be consistent with a healthily flexible and competitive economy, no undue strain on the balance of payments, and a steadily rising level of consumption. All that is needed (apart of course from international peace) is a flexible monetary policy helped (or at least not hindered) by fiscal and wages policy. The monetary authorities would lean against the wind by making money more, or less, freely available from the banking system, and more, or less, expensive to obtain. Any deviation from this equilibrium would presumably follow a typical pattern, with employment, prices, and spending moving consistently, and the central bank having no doubt as to the direction in which it should lean.

The position in recent years, and specially in recent months, has been anything but clear cut. For example, throughout the present economic recession in the United States of America retail prices have kept moving up. That may be explained, in part at least, by seasonal conditions affecting food prices, and by the growing importance of services in the cost of living. But a somewhat similar situation has developed in other countries where a period of credit restrictions has been associated with a slowing down of the rate of expansion of in-

dustrial production—in some cases a levelling off or even a small downturn—with an increase of unemployment but still some increase in retail prices. Balance of payments positions have usually improved, but there remains the suggestion that monetary restrictions cannot stabilize the price level and the balance of payments unless they are severe enough to slow down the rate of growth and increase unemployment. And since the purpose of economic activity is steadily increasing consumption to meet human needs, some are tempted to the conclusion that it might be better to have a little less stability and a little more growth.

This raises a vast subject. I am not going to comment any further except to emphasize the dilemma a central bank can find itself in. No one wants to be in the position of being a spoil-sport, guilty of slowing down economic growth, or of causing an unreasonable degree of unemployment. On the other hand there is a clear-cut responsibility on the central bank to be the guardian (perhaps the last remaining guardian) of the currency, in respect of both price stability and exchange stability. In the push-and-pull of economic forces the central bank must be very persistent in its concern for economic stability in order to counterbalance the many forces in a Welfare State making for chronic inflation and external deficits—not because the central bank does not believe in Welfare but because it believes that inflation is not the best way to achieve it. In the same way a physician believes that human health is not achieved by high blood pressure. Fortunately, there is still good reason to believe that stability of prices and flexibility in the use of resources is a better guarantee of economic growth (and therefore of rising levels of consumption) in the long run than the apparent stimulus of inflation.

The trouble seems to be in the interpretation placed on the term “full employment”, which has become an emotional term. It is widely held that in order to ensure “full employment” it is necessary to have over-full employment. The logic is rather hard to follow. As the Cohen Report said—“A free and flexible economic system cannot work without a perceptible (though emphatically not a catastrophic) margin of unemployment”. In New Zealand we have had 102 per cent employment (surveyed vacancies at about 2 per cent of the labour force, unemployment negligible) and this has become widely accepted as normal. If we were to move towards a more efficient version of “full employment” (i.e. a state in which it is as easy, in general, for a worker to find an employer as for an employer to find a worker) it would probably cause alarm and a clamour for economic policy (including central bank policy) to be suitably softened in order to avoid a crisis. In this way a limit is set on the extent to which a central bank can be allowed to operate effectively in the interests of economic stability and of that steady growth which is the only real means of improving living standards.

The dilemma a central bank faces may yet disappear if it is found that the slackening of the rate of economic growth in the past two years

or so is due not so much to the impact of credit policy as a reflection of the ending of the upward phase of an investment cycle. There is a good deal of unused industrial capacity in the United Kingdom and United States of America, the post-war boom being based on catching up on arrears. The expansion of capacity has overreached itself and must pause awhile until consumption catches up—which it must do before long. Reiersen describes the position in the United States of America thus:

“From 1953 to 1957, industrial capacity appears to have increased by some 22 per cent or more—while industrial production in 1957 averaged only 6 per cent higher than in 1953 and activity in the durable goods industries advanced by about $4\frac{1}{2}$ per cent. Many industries now seem to have sufficient capacity for several years to come.”

And in any case it is not true that stability and growth are always incompatible. For example, in Austria, according to the President of the National Bank, in 1957 “the upswing experienced by almost all economic sectors was not accompanied by inflationary symptoms. The expansion was remarkably balanced. Employment and production reached new peak levels and the development of the price wage sector was calm”.

The Growth of Non-Banking Financial Institutions

A second factor in the monetary situation is the steady rise in importance of financial institutions other than commercial banks. The twentieth century has seen a very large growth in insurance companies, savings banks, investment trusts, building societies, hire-purchase and industrial finance companies, etc.—in fact the whole range of middlemen in the provision of funds for industry and commerce. As holders of financial assets the commercial banks in some countries may have been losing ground relative to the others,¹ and the greater the use made of credit restrictions applicable to commercial banks the stronger is this trend. Man is an inventive creature, and when unable to obtain finance from a bank he is not slow to devise some other way to obtain it. The commercial banks are by tradition and legislation subject to a degree of discipline by the central bank, the other institutions are not. Is this a disadvantage from the central bank's point of view? On the face of it, yes; but Karl Bopp, a Federal Reserve economist, has his doubts. He says that as the network of credit contacts becomes more elaborate, the influence of monetary authorities permeates the economy more thoroughly; the more widespread ownership of the public debt has a similar effect, as more people are affected by changes in security and property prices. “The tools of central banks have not been blunted seriously,” Bopp concludes.

A similar conclusion was reached by Dr. Coombs (1957) in his discussion of the situation of trading banks in Australia, where the

1. Adequate statistics are not available to prove whether this has happened in New Zealand. For an Australian comment see Dr. Coombs' address to the Institute of Bankers (1957) and his Mills Memorial Lecture (1958).

banks (as in some other countries but not including New Zealand) are meeting this problem by themselves participating in the share-holding of other types of financial institution, notably industrial finance, hire-purchase finance, savings banks, and now unit investment trusts.

The question does arise, however, as to whether central banks should have power to regulate these non-banking financial institutions, e.g. by means of minimum cash or liquidity requirements, or by regulating the terms on which they receive deposits or make loans, or by influencing their overall policies by informal consultation and persuasion. My qualified preference is for the last of these, both on general principles and because of the difficulty of formulating regulations that would be both reasonable and effective, to supplement any that may be already in existence in relation to savings banks, hire-purchase terms, and capital issues control. At all events, it is quite clear that central banks must interest themselves more actively in the long-term capital market and in the affairs of these non-banking financial institutions.

Credit Restrictions and the "Small Man"

We often hear credit restriction condemned on the grounds that it is indiscriminate in its operation and is particularly severe on the "small man". It is important to be objective about this. Unfortunately, it is hard to get facts on the subject, the opinions expressed being based often on a few specific cases or on the published balance sheets of large companies. These are liable to be misleading. Some things need to be said, however—

1. During a period of inflation and sellers' markets, there is bound to be an increase in the number of small new businesses formed. When measures are taken to control inflation, some of those small new businesses will be found vulnerable because of insufficient capital, property and equipment bought at high prices, inexperienced management, lack of sufficient competition, and in general a dependence on inflated demand to keep turnover above break even point. They will "go to the wall". Labour will be temporarily displaced, but the employer and the shareholder will suffer, too, perhaps severely. This will happen irrespective of the method used to control inflation; it is not an attribute of monetary policy exclusively.

2. The small man and the small company are vulnerable because they have no access to the public capital market in the way larger public companies have. The remedy is not to allow them to use all the bank credit they want, but to provide appropriate financial institutions as an alternative source of funds in credit-worthy cases.

3. When credit is tight it often happens that small firms, feeling the squeeze, delay payment of their debts, with the result that the wholesalers and manufactures (usually larger firms) find their overdrafts going up. The explanation of higher overdrafts to big firms is often that it is quite involuntary on the part of both the bank and the customer and both are, in effect, "carrying" the small man.

4. A drastic enforced reduction of the overdraft of a big firm may have far-reaching and harmful effects not only on that firm itself but on all firms, large or small, which are linked with it as suppliers or customers.

5. Where a bank is required, by the central bank's credit policy, to make a substantial reduction in its advances, it will not get very far by concentrating on its small customers. They may be numerous but their total advances are a modest proportion of the total. Attention must be paid to the big customers as well.

6. It remains true, however, that banks have difficulty in being harsh on large firms which have been valued customers for a long time, especially if they are of unquestioned soundness and are doing worthwhile work from a national point of view—and this is true regardless of whether the bank is private or state-owned.

While agreeing that there may be a limited basis of fact in the criticism that monetary restrictions are unduly severe on the small man, it does not follow that monetary measures should not be used. Improvements in the capital market are needed, and as the Governor of the Bank of Canada (Mr. Coyne) said in his last annual report, the central bank could give a directive to the commercial banks not to touch the small man—unless of course he is not credit-worthy anyway. It would be well, too, to note the fact that the enormous Bank of America is said to owe its growth, partly at least, to its special care of the "small man".

Impact of a Credit Squeeze

Attempts are sometimes made to specify the particular aspects of the economy which are likely to be affected—or not affected—by a general quantitative restriction of bank credit. It seems to be widely held that stocks of goods and prices of basic commodities are influenced most, while capital expenditure is much less likely to be affected. Sometimes a central bank has been upbraided because it has applied credit restrictions blindly, hoping that the right kind and degree of disinflation will quickly result, that prices, employment, stocks, retail turnover, capital expenditure, and import payments will *all* be neatly adjusted to a position of equilibrium. This, it is said, is far too much to expect—credit restrictions are much more limited and uneven in their impact. And when this view is combined with the criticism that some of the results of credit restrictions are positively harmful (e.g. slowing the rate of growth, hurting the small man, causing too much unemployment) there is a tendency to be sceptical about monetary policy in general.

It is true that in many respects the results have not been as quick and as effective as had been hoped. It is also true that, in New Zealand's experience, virtually every economic series has been influenced to a greater or less extent in the right direction during the period of the credit squeeze—retail turnover, private capital expenditure, import

payments, share prices, vacancies, small savings, interest rates. In respect of some of these indicators the effect has been small, or very late in appearing, or only temporary. Is this due to the inherent deficiencies of monetary policy, to a too lenient application of the restrictions, or to frustration by non-monetary factors including overall deficits in the Government sector? And if the beneficial results *were* due to the credit restrictions, by what detailed chain of events were they achieved—precisely in what ways did changes in the availability and cost of bank advances influence decisions about capital spending, holding of stocks, and consumer spending? Here is a field of research which still remains almost untouched. Something has been written about it but usually from a theoretical standpoint rather than from direct investigation. Maybe the Radcliffe Committee will study the subject, but it will not follow that any findings it makes in respect of the United Kingdom will be applicable to other countries with a different pattern of banking, of financial institutions and of trade. It is a further illustration of the fact that the task of central banks would be easier if we knew more about how the monetary system really works. There is a steady growth of knowledge but a long way still to go.

4. *Conclusion*

It would be easy to set out an impressive list of reasons why the lot of a central banker, like that of the policemen of Penzance, is not a happy one, and why his achievements often fall short of expectations. He has to cope with a host of independent variables—international and domestic politics, the weather, public psychology, vested interests, “sacred cows”, built-in rigidities, inadequate statistical data, wage fixing procedures, and inadequate powers. How often in recent years have Governors of central banks all over the world been forced to draw attention to the fact that a monetary policy carefully planned to defeat inflation has been frustrated by fiscal deficits, and to plead for a co-ordination of fiscal and monetary policy!

This sounds very much like an apologia; but there is no need for central banks to feel pessimistic. On the contrary, many basic principles remain firmly established; and there is some consolation in the fact that, even if monetary policy is subject to the limitations and frustrations I have mentioned, the other principal type of action—fiscal policy—is in much the same position. It would be nice to think that it is possible to dovetail the public sector into the private so that the total of spending is neatly stabilized at a level of full employment with a satisfying upward trend. In practice the Budget (in the widest sense) as a means of achieving this end is as uncertain in its effects, as hampered by politics and rigidities, and as full of problems of method and timing as monetary policy is.

In any case there are still ways in which central banks can improve their technique. One of them is to seek fuller economic information and to spend more time and energy analysing it. J. L. Robertson, a member of the Federal Reserve Board, has put it this way:

“If the men charged with formulating monetary policy had instantaneous, complete, and accurate information regarding the (American) economy, and also had the infinite wisdom to evaluate and apply the information precisely, delicate adjustments might be made from day to day that would furnish the country with exactly the amount of credit it needs to achieve our economic objectives—the objectives might not be achieved because of factors beyond our control, but the money and credit supply could be just right.

“Unfortunately, information is not available on those terms, and even if it were, no men have the absolute wisdom to understand it perfectly and to make the necessary decisions without error. The most we can do . . . is to get the best information we can as fast we can, to understand and apply it as well as we can, and then to adjust monetary policy to the needs of the country as we see them. The . . . economy is not a test tube into which one can pour controlled and measured ingredients, and so it follows, time and again, that the formulators of monetary policy misjudge and are compelled to make adjustments later and more radically than would have been ideal, as we see in hindsight.”

A second means is to pay more attention to the capital market and its various important and growing institutions, helping to create new ones where necessary, and above all seeking their co-operation and goodwill.

Thirdly, there is the question of public relations. I do not mean the go-getting trumpet-blowing activity with which American commercial firms supplement their advertising. A central bank should not be interested in that sort of thing. What I have in mind is better described as “relations with the public”—helping people to understand what a central bank is for, what it tries to do, and how and why it does it. It is so much easier to get support for a certain line of action if the reasons are clear and the monetary authority has the respect and goodwill of the people. Don’t misunderstand me—a central bank is never likely to be a hero or a popular favourite, because it must spend at least part of its energy pushing and pulling the economy in directions in which it is reluctant to go. But a central bank’s influence can be constructive, its opinion respected, its actions acknowledged as sound.

Finally, the central bank must be full of new ideas and prepared to experiment. If its powers are limited, it should seek new ones; if its environment is different from that of other central banks, it should adapt its methods accordingly; it must never be satisfied. We are fortunately already in a period of innovation among central banks. The new banks which I referred to earlier are finding their feet and are working out their own methods, with help from older institutions but without feeling bound to copy them. But the burst of innovation is by no means limited to the new banks and the under-developed countries. Take almost any copy of the *International Financial News Survey*, and you will find reference to some monetary measure, somewhere in the world, which is a new technique, or a new variation on an old theme.

Central banking does not stand still, using only a limited range of traditional methods. It is always looking for something new. Consider, for example, the great variety of ways in which variable reserve ratios are being used; the new industrial and rural finance corporations which have been set up under the wing of central banks; the various types of re-discount facilities and limits; the practice of making Bank Rate follow the market instead of trying to lead it; the very deliberate actions of the Bank of Canada in creating a short-term money market instead of waiting for one to grow; the special account system and the L.G.S. ratio convention here in Australia; and so on.

It is clear that the role of central banks is becoming a more varied one all over the world. Whatever the variations may be, they will be all based on the central fact—that even though the best monetary policy in the world may be hindered, indeed frustrated, by fiscal or non-monetary factors, changes in the availability and cost of bank credit are still and always will be a major economic force. There will always be scope for a monetary authority, armed with adequate powers, and using them as skilfully as possible in the public interest.

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IMPORT RESTRICTIONS AND TARIFFS: A NEW LOOK AT AUSTRALIAN POLICY

The main argument of this paper is that (a) import restrictions should be replaced by tariffs, and (b) tariff rates should (with limited exceptions) be the same on all imports, as there are few good reasons for the tariff rate to be higher on one product than another. In addition, alterations in the exchange rate should be considered for long-term balance of payments difficulties. Some simple and well-known principles are applied to the analysis of the instruments of Australia trade policy. The aim is to stimulate discussion, and any tendency to dogmatism is for the sake of brevity only.¹

I

Import Restrictions versus Tariffs

The argument that import restrictions should be replaced by a uniform tariff is not new.² We begin here by spelling it out in some detail. It means not only that the whole limitation of imports should be brought about by tariffs, but that the tariff rate should be the same on all imports; even imports which at present are subject neither to tariffs nor to import restrictions would then pay the standard tariff rate. It is assumed that present import restrictions do have some effect in reducing the value of imports and that in the absence of restrictions some other measures would be required to maintain balance of payments equilibrium. The problem arises primarily because import restrictions appear to be becoming a long-run instrument of Australian balance of payments policy. As such, however, they have these disadvantages.

(1) Import restrictions require licences to be allocated; this is a continuous source of friction between the business community and the

1. This paper was originally presented at the 1958 Congress of the Australian and New Zealand Association for the Advancement of Science in Adelaide. It succeeded in creating discussion, and one result is that the present version is considerably revised. I am indebted to a large number of Australian economists for their comments, and in particular to Professor H. W. Arndt, Professor R. I. Downing, Dr. J. O. N. Perkins, Mr. E. A. Russell, Dr. W. Salter and Dr. S. P. Stevens. In addition, a debt is owed to Professor J. E. Meade's *The Balance of Payments* (O.U.P. 1951) and *Trade and Welfare* (O.U.P. 1955) which outline most thoroughly the basic principles applied in this paper.

2. See H. W. Arndt "Import Licensing—Are Objections Valid?", *Voice*, June 1955; P. H. Karmel, *Economic Policy in Australia—Ends and Means* (G. L. Wood Memorial Lecture, Melbourne 1954); and E. A. Russell, "Trade Policies and Australia's Balance of Payments", *Business and Economic Policy* (Third Summer School of Business Administration, Adelaide 1958). (Professor Arndt examines the proposal for a uniform tariff without wholly supporting it.) Aspects of import licensing are also discussed in E. Lundberg & M. Hill "Australia's Long-term Balance of Payments Problems", *Economic Record*, May 1956, T. W. Swan "Longer-run Problems of the Balance of Payments", *A.N.Z.A.A.S.* paper, 1955, and J. E. Meade, "The Price Mechanism and the Australian Balance of Payments", *Economic Record*, November 1956. The uniform tariff idea in the wider context of commercial policy for under-developed countries is discussed favourably by Dr. Gunnar Myrdal in *An International Economy* (Routledge & Kegan Paul Ltd., 1956), pp. 281-2.

public administration, and creates a heavy administrative burden. With tariffs, the only arbitrary element is the fixing of the tariff levels for the various products; and this would be avoided if there were a uniform tariff on all imports.

(2) The monopoly profits which tend to be created by import restrictions go to those importers fortunate enough to have obtained the import licences or to have imported in large quantities in the base year. This becomes particularly evident when the licences are in effect bought and sold, as they have been in some cases in Australia. Tariffs, on the other hand, syphon off the monopoly profits to the Treasury.

(3) Import restrictions raise the landed prices of imports if foreign exporters are able to appropriate to themselves some of the monopoly profits. They thus tend to worsen the terms of trade. Tariffs are more likely to do the opposite.

(4) Import restrictions have an inflationary effect by diverting demand away from imports on to Australian goods. They must then be accompanied by deliberate disinflationary measures (higher taxes, interest rates, lower government expenditures), but the difficulty is that the products for which demand increases due to the import restrictions may not be just the ones for which demand decreases due to the disinflation. So pockets of inflation or unemployment may be unavoidable, particularly in the short-term. On the other hand, tariffs are automatically disinflationary, provided the customs revenue is not spent. The disinflation is *biased* in just the right way to absorb the spare purchasing power created by the reduced imports. If the elasticities of demand for all imports were unity there would be no change at all in the demand for any home-produced goods. (If import demand elasticities are less than unity there has to be some offsetting *inflation* to maintain the demand for home-produced goods—or, in other words, some of the tariff revenue can be spent.)

(5) The factors discussed so far justify the replacement of import restrictions by tariffs. Finally, there is a reason why the tariffs which replace import restrictions should be the same on all imports. Import restrictions tend to have the wrong sort of protective effect, and discriminate undesirably as between goods. While it is true that for any particular import restriction there is always a tariff which would have the same effect on the volume of imports—so that a tariff structure *could* be developed which would keep out exactly the same imports as the import restrictions—the tariff technique provides the opportunity for ensuring that just the right goods are restricted. These are the goods (a) substitutes for which can be produced at least cost in Australia, and (b) which consumers or consuming industries can most do without. In other words, they are the goods for which the price elasticities of demand and supply in Australia are high. This selection would be automatically brought about by a *uniform ad valorem tariff* (or primage duty).

It would most restrict the quantity of those imports the elasticity of demand for which is high. If we suppose that there is no protective effect in the short-run (home elasticities of supply are zero) then a uniform tariff will most cut down imports of *inessentials*, these being defined as goods which consumers or consuming industries will most readily do without when their prices rise. It is this type of selection on the basis of essentiality which import restrictions usually aim at. But the uniform tariff avoids the need for arbitrary selection and enables the goods to select themselves. Even more important is that in the long-run the protective effect must be taken into account. The uniform tariff ensures that, for any given £100 worth of imports replaced, that Australian industry is protected which is able to produce the product with the least excess cost over the price of the imports.

There is thus a strong case for a *uniform* tariff to replace import restrictions. It would automatically discriminate among imports in the desired way.³

II

Objections to Replacing Import Restrictions with a Uniform Tariff

There will be general agreement that it is desirable to get rid of the administrative complications and the monopoly profits, and to improve the terms of trade. But a number of objections must still be considered.

(1) *Tariffs and the Cost Level*

Tariffs, it is said, raise the cost structure. So a uniform tariff will raise the costs of imported materials to Australian industry. Replacing import restrictions with tariffs will therefore reduce the competitiveness of industry.

But import restrictions also raise the cost structure, though not precisely the same way. Suppose to begin with that the tariff is not necessarily uniform. If importers charge what the market will bear, and if for every product the tariff is fixed so as to have the same effect on the volume of imports as the previous import restrictions, then there will be no change in home market prices.

There are circumstances when importers do not exploit the monopoly situations created by import restrictions, but present-day Australia does not seem to be one of them. It might be so if the restrictions were expected to be very short-term and traders aimed to maintain goodwill, or if there were price-control or a price-inflexible or "conscience" economy (Britain?), but it is rarely true of a rapidly

3. At present licences for inessential goods (B Class Licences) can be used to import any product in the B-category. This transferability of licences as between commodities tends to have the same effect as a uniform *ad valorem* tariff for all the goods concerned, limited only by imperfections in (what is in effect) the market for licences. The wider the scope for switching licences as between commodities, the less discriminatory the import restrictions.

expanding society.⁴ Profits are "taken" not only in the obvious cases where licences are in effect sold, but also when licence holders use the licences themselves in the course of their regular business, and the licence profit is just merged in the general profit of the enterprise.

If importers do *not* "take" the profits, an arbitrary redistribution of income is avoided (an advantage also brought about by a tariff). Since shortages will not be reflected by price rises, it will also appear that there has been no change in the cost of living and (with given money wages) no change in real wages. But this is an illusion, since, in Professor Swan's words "'real wages' would have to be measured in terms of purchasing power over a basket of commodities consisting in part of empty import boxes, whereas actual wages would be spent on more expensive or less preferred home substitutes".⁵ Only *if* profits are not taken, *if* trade unions are subject to the "cost-of-living index" or "empty box" illusion and *if* the fall in real wages which must necessarily be associated with a balance of payments improvement at full employment cannot be attained otherwise, is there some case for preferring import restrictions.

A further consideration is that import restrictions tend to be less on materials than on finished goods. So replacing the present set of restrictions with a *uniform* tariff will raise the Australian prices of imported materials (and lower prices of other imports). But contrary to general belief, this is desirable. It will encourage import-saving right down the line, to all the industries using imported materials. For example, petroleum products will be economized right throughout industry. Not only consumers but factories will be compelled to look for import substitutes.

One effect would be to impose a petrol tax quite distinct from the existing tax. The present tax is meant to be one instrument of public finance and to pay for roads and other costs due to our motor-car civilization (police, hospitals, etc.). Possibly it is more than enough for these purposes. But it may not be more than enough when the high import content in petrol is taken into account, justifying restrictions similar to those on other imports.

(2) *Wage Inflexibility and Unemployment*

Demand elasticities may be no guide to social benefits and costs because internal prices are not always flexible. Therefore, it might be argued, a uniform tariff will not necessarily discriminate among goods

4. This judgment is based on general observation. It finds some confirmation from B. M. Cheek, "Profit Margins and Wage Shares in Australian Manufactures, 1945-55", *Economic Record* August 1957. Mr. Cheek argues from a thorough statistical analysis that Australian profit margins have been influenced by the degree of import competition and by *expected* changes in the rate of imports (and import restrictions). While an argument that profits in protected manufacturing industry vary with imports does not necessarily prove that internal prices of the imports are flexible and that importers do "take" their profits, his general conclusion that "The balance of evidence would seem to lie in favour of demand-based pricing" (*ibid*, p. 204) is very relevant.

5. T. W. Swan, *A.N.Z.A.A.S.* Paper 1955, *op. cit.*

in the most desirable way. This problem arises mainly because of the downward inflexibility of real wages.

Suppose a tariff is placed on textile yarn, a raw material for cloth, the elasticity of demand for cloth being high. The tariff raises the price of yarn and hence cloth, reduces sales of cloth substantially, and causes unemployment of cloth-workers. Perhaps they can find jobs in other industries using raw materials having a low import content. But if the labour is immobile, the only way unemployment can be avoided is for wages of cloth-workers to fall; this would lower the price of cloth again and stimulate sales. With wages lower and the price of yarn higher, production will tend to become more labour- and less cloth-intensive. But if wages are inflexible downwards and do *not* fall, the tariff on yarn will have created unemployment in the cloth industry.

From this one might conclude that tariffs should not be placed on imported raw materials where these are employed in a fixed ratio with Australian labour and where this labour is immobile. So short-run deviation in certain cases from the uniform tariff principle might be justified. But for the longer-run it should be remembered that (a) Australian labour is pretty mobile, particularly immigrant labour, and (b) real wages *do* vary, mainly through changes in inducement margins and overtime.

(3) *G.A.T.T. Commitments*

Agreements under G.A.T.T. may prevent us from raising certain tariffs. One possibility is to attempt re-negotiating some of the agreements to allow for uniform tariff changes. The allowance would apply only to balance of payments difficulties—which would otherwise be handled by import restrictions. An alternative is that instead of a uniform tariff there might be an equivalent increase in the selling rate for sterling and other foreign currencies charged by the Commonwealth Bank (the extra profits being transferred from the Bank to the Treasury). This would in effect be a multiple exchange rate system.⁶ Failing this, exemptions would need to be made for “bound” tariffs.

(4) *Speed of Effect*

In an emergency, it is said, the effects of a tariff are slow and cannot be precisely foreseen. In the short-term, import demand elasticities are low and a very high tariff would be needed to obtain a sufficient fall in imports.

But: (a) is it ever necessary to get immediate results, since our reserves need never be run that low, and (b) cannot rough results be foreseen on the basis of previous tariff experience, bearing in mind that the tariff can be altered if the forecast turns out wrong?

Furthermore, import restrictions usually surprise with the long time they take to work in an emergency. If the restrictions are newly imposed there are inevitable delays in establishing the administrative

6. The suggestion comes from Professor Arndt (*Voice*, June 1955). He has since pointed out to me that such a multiple rate might give rise to black-market deals between importers and exporters.

mechanism. Apart from that, allowances for contracts and hardship concessions of various kinds slow up the fall in imports.⁷ These are expressions of the same underlying factors which reduce the elasticity of demand in the short-run and thus slow up the effectiveness of tariffs. For a low short-run demand elasticity simply means that traders find it inconvenient to cut down imports quickly.

Not only can import restrictions be as slow as tariffs in their effects on imports but a forecasting problem also remains. It is difficult to foresee the need or pressure for hardship allowances, and the rate at which licences (usually valid for some time) will be used up.

A Variable, Uniform Tariff

The best policy would be to vary the uniform tariff with the balance of payments situation, an approximation to a flexible exchange rate.

Whenever the balance of payments gives signs of trouble, it would lead to speculative over-importing, just as the expectation of tighter import restriction does. But there would be less speculation than when a depreciation is expected, for there would be no motive for short-term capital movements or for lags in payments for exports. Furthermore, advance payments for imports would be replaced by advance *arrivals* of imports; stocks of imported goods would be built up rather than credits with overseas suppliers. The availability of finance is a limit to both forms of speculation, but the inconvenience of excessive stock-building is an additional deterrent in the case of tariffs or import restrictions. And it would be easier to obtain detailed statistics of stock-building than of advance payments to overseas suppliers.

On the other hand, while preferable to a flexible exchange rate, a tariff does not provide the same *absolute block* to imports as do import restrictions. At times when full employment expenditure overshoots into excess demand, import restrictions might force the excess into temporary savings; reliance on a tariff would allow it to overspill into imports, unless the tariff were raised quickly and adequately. So, the replacement of import restrictions by a tariff requires either a lower average level of expenditure, and hence some unemployment in the off-years, or higher international reserves to absorb the over-spill shocks. Australians would not choose the unemployment, so finally, replacing import restrictions with a variable tariff would require a higher average level of reserves, the cost of which must be weighed against the various disadvantages of import restrictions.

III

Is There a Case for Discriminatory Tariffs?

Suppose we use a uniform tariff together with fiscal and monetary policy to maintain full employment and balance of payments equilibrium. Is there then any need for special tariffs for particular indus-

7. This was borne out by the experience of Australia in 1955 and, to a lesser extent, Britain in 1952.

tries? Is there any reason why the tariff on motor-cars should be higher than on hats, or why the tariff on one type of paper should be higher than on another? This brings us to aspects of the traditional tariff controversy.

The question is limited by the statement of the problem. We are not concerned with tariffs versus depreciation or tariffs versus doing nothing at all. The issue is simply: should the tariff be discriminatory or non-discriminatory? So two familiar arguments for the Australian tariff are put outside the discussion, (a) that it keeps up employment or provides employment for a growing population, and (b) that it redistributes incomes in favour of producers of goods competing with imports against export producers.

Let us consider the few arguments for discriminating tariffs having a possible validity.

The Infant Industry Argument

If the candlestick-makers go to the Tariff Board and say: "We would make losses for five years without a tariff, but after that we will be able to compete", the Board should reply: "If you are so sure of your competitiveness five years hence, why don't you go to the capital market and raise funds to cover your initial losses? That is what you would do if you wanted to compete against existing Australian firms. Why should you make the candlestick consumer a compulsory shareholder (with no control or return guaranteed) in your business?"—"But the market would not lend us the money."—"Wouldn't they believe you?"—"They don't look that far ahead."—"So there is something wrong with the capital market? . . . and many of you people asking for tariffs are big enough to get whatever capital you want, often out of your own reserves."—"Then what about John Stuart Mill and all the textbooks since?"

Here the applicants ought to be reminded that the textbook case for infant industry protection requires proof of *external* economies, and that these must be larger than the external economies which would arise if the same resources were employed in the uses into which they would naturally flow with a uniform tariff.⁸ Such external economies do develop with the general growth of an industrial structure, and provide sometimes a case for protecting industry relative to agriculture. There is rarely much case for protecting one industry rather than another, and when a country is already highly industrialized it is doubtful whether even a general growth in industry necessarily creates

8. When one particular firm raises the scale of its output and this directly reduces its *own* costs of production, then there are *internal* economies of scale. If, on the other hand, it helps to reduce the costs of other firms, or if it contributes its little share in reducing the general costs of industry without this having any perceptible effect on its own costs, then there are *external* economies. External and internal economies are defined here in relation to the *firm*, not the *industry*. Thus economies might well be internal to an industry but if they are external to the firms making up the industry there will be a possible case for protection. For a more precise discussion of external economies see H. W. Arndt "External Economies in Economic Growth", *Economic Record*, November 1955.

more external economies than diseconomies.⁹ Proof of *internal* economies—that costs will fall either with time or with increasing output—is no valid case for protection.

But suppose it were. Then the case would be for temporary protection only. So the tariff should be a sliding one, to make sure the infant either grows or dies. Right from the beginning the duty would be announced as 20 per cent (over and above the uniform duty) the first year, 15 per cent the second, and so on. Any particular infant industry tariff would disappear in the process of time. Firms whose costs do not fall in time would find its shelter insecure.

The Terms of Trade Argument

To doctor the terms of trade, higher tariffs should be placed on those imports whose landed prices would fall (or fall the most) in response to the tariff. In fact our import prices are unlikely to be much affected by our trade policies; where they are it is usually a case of monopolistic selling,¹⁰ and it is then that foreign exporting interests put up the strongest case to the Tariff Board against tariffs. Present tariff-making policies do not appear to follow the terms-of-trade rules (and it is not suggested here that they should).

Distribution of Income

A tariff above the average on motor-cars and below average on hats redistributes incomes in favour of motor-car producers and hat consumers. It is difficult to see any particular pattern of redistribution, except that large firms or well-organized industries are more likely to approach the Tariff Board than the small and divided. On the other hand it is possible that present tariff policy tends to level out profit differentials. Suppose the general Australian cost level rises relative to foreign costs. One firm after the other approaches the Board for help. Who will come first and who is likely to be the most successful pleader? Is it not the firm which was operating on a small margin of profit to begin with and would go out of business if it does not get help? In the short-run this may be the firm with the highest elasticity of supply for a price fall (a small price fall and production ends), and this type of discrimination may not bring about a great divergence from the equilibrium which would result with a uniform tariff. To take an extreme case, if firm *X* has a zero supply elasticity (no change in production due to a price fall) and firm *Y* a positive supply elasticity, the effect on the pattern of production of a uniform 10 per cent tariff

9. The true relevance of the infant industry argument in Australia is not to the general growth of the industrial structure but to decentralization. Infant industry subsidies might well be justified to attract industry from our sprawling capital cities to country towns. But the industrial growth of a country town has to be sufficient for the resultant external economies to reduce the cost level so much (and provide a sufficiently varied labour supply) for the industries eventually to stand on their own feet (and, strictly, to repay the original subsidies). Probably industrial trading estates are a better technique than direct subsidies.

10. These include the cases, mentioned earlier, where import restrictions worsen the terms of trade.

and of a 10 per cent tariff just for firm *Y*'s product would be the same. But in the long-run a high initial profit level and high reserves are not necessarily correlated with low supply elasticities, and this type of *ad hoc* tariff-making leads to a result very different from that of a uniform tariff.

Import restrictions usually have more logical implications for the distribution of income than discriminatory tariffs. A restriction above the average for motor-cars and below the average for hats may imply not that the demand for motor-cars is more elastic, but that hats are poor men's and cars rich men's goods. To get the same effect when tariffs replace import restrictions, the tariff rate should be higher on cars than on hats. But why should import restrictions or tariffs be used as devices for redistributing incomes in this way? The logic is that removing a balance of payments deficit means a fall in the community's real income, and this fall should be spread not randomly (depending on who happens to consume imports) but on the progressive tax principle. The objection is that (a) there are less distorting ways of taxing progressively and (b) except in the very short-term, the effect is not only that car consumers lose more than hat consumers, but in addition real income is redistributed arbitrarily in favour of Australian car producers relative to hat producers.

Dumping

Dumping may mean export sales at prices below sales to the home market. When Australia does this we call it a home-price scheme. This kind of dumping is often—as in France and Australia—part of a substitute policy for depreciation of the exchange rate. If the French ceased to subsidize their exports and restrict their imports, and really devalued instead, we would find their wheat competition just as hard. No objection can be taken to it and it provides no case for protection. If the Japanese are prepared to sell us their products cheaply, we should be glad of it. It is of no real interest to us at what prices they sell the same products to their own people.

On the other hand dumping may mean *temporary* export sales at low prices; this is not necessarily associated with these prices being below home-market prices. If the low prices are due to an exceptional harvest, there is no objection; the goods must be sold and competitors can alleviate the effects with stabilization schemes. But if they are designed to kill competition, and that done, will be raised again, there is a case for anti-dumping duties. Temporary dumping, whether by lower prices or improved quality of products, is a familiar device of monopolies. One wishes there were some way of dealing with it in internal trade.

Defence

The last resort argument for protection, though economists usually steer clear of it, is one which ought to be subject to as close a scrutiny as the strictly "economic" ones. Here there are just two reminders:

(a) the issue at this stage is the *pattern* of manufacturing industry, not its total size, and (b) it is the strategic situation of 1958 which is relevant, and in particular one must ask what prospects there are of another prolonged siege. And if a defence argument then remains should not the protection be given by bounty and charged up to the defence vote?

Conclusion—The Case Against Discriminatory tariffs

There seems very little economic foundation for putting a high tariff on one good and a low tariff on another in present Australian circumstances. What then are the principles the Tariff Board applies? If an industry is found to be efficient, is that a case for saying it does not need a tariff, or for giving it a tariff so that its profits can be even higher? (Or is there some optimum degree of inefficiency?) One senses that there is a Tariff Board sense in which a firm can be both efficient and in need of tariffs (above the average), and it is this concept which needs spelling-out.

The Board concerns itself with relative levels of costs in Australia and supplying countries. To what extent is this an attempt to grope for a proper average tariff, on the lines discussed above, and to what extent does it suggest a query about the law of comparative costs? Suppose a product is produced in Australia at a cost higher than the price of imports, the cost including a reasonable rate of profit and return on capital invested. The higher Australian price may be due to (i) a higher general cost level, (ii) higher *particular* costs—e.g. the particular labour required may be more expensive or less efficient, or raw materials may be dearer, (iii) inability to benefit from economies of large-scale, or (iv) relative inefficiency of Australian management. Cost comparisons with overseas firms seem to aim at isolating (iv) so that the tariff can offset (i), (ii) and (iii). But the correct principle is to offset only (i).

The strongest objection to the present system of tariff-making is not that its economic logic may be in doubt or that it brings about an arbitrary redistribution of income, but that it is detrimental to efficiency and one element in our pressure-group society. When a firm is not doing well, instead of being forced to reduce its costs or improve its product, it has the more fruitful avenue open to it of stopping or hindering its competition. The energies which might better go into competing on an economic basis are put into pressing for higher protection. It is true that the close examination made by the Tariff Board seems to be some safeguard against this. Indeed the most important function of the Board may be to do the job which Monopoly Investigating Commissions of various kinds do in other countries, and a more direct re-assessment of its functions along these lines might be a logical development. But the question remains whether the monopoly-creating effects of the tariff are sufficiently balanced by the monopoly-controlling effects of the Tariff Board.

A Sliding Tariff?

There is something to be said for an infant-industry tariff sliding downwards automatically with the efflux of time. Similarly there is a case (developed above) for a uniform tariff varying with the balance of payments situation. But nothing can be said in favour of tariffs for particular industries which vary automatically with the volume of imports or the share of imports in the Australian market. Such arrangements to offset automatically changes in comparative costs deprive Australian industry of any incentive to maintain or improve efficiency, deprive the Australian consumer of the benefits of productivity improvements abroad, and induce foreign exporters to raise their prices in anticipation of the increased tariff.

Country Discrimination

At present our tariff discriminates as between Commonwealth sources on the one hand and all the rest on the other. Import restrictions discriminate as between dollar and the rest. If our tariff and import restrictions system were amalgamated into one system there would have to be at least four categories—Canada, other dollar, Commonwealth (excluding Canada) and the rest. Until the Japanese Trade Agreement last year we also discriminated against Japan in both our tariffs and import restrictions, so until then there would have had to be five categories.¹¹

There are two valid motives from Australia's point of view for *country* discrimination—Fair Exchange and Monetary.

(1) Preferences to Britain's imports may be justified if the Fair Exchange is adequate preference for our exports in her market. But the import preference in itself is a cost to us; it worsens our terms of trade since it prevents us buying in the cheapest market. Apart from our sugar and fruit-growers few will agree that the gains to us from Commonwealth preference outweigh the losses.

(2) Australia's direct self-interest does not justify any *monetary* discrimination. Our sterling balances in London are fully convertible into any other currency—even dollar—and all we need do is watch these balances. Switching from dollar to sterling imports will not raise the balances; in fact it will lower them since any switch induced by tariffs or import restrictions will raise our import costs.

The monetary motive for discrimination only arises once we recognize our responsibility for the sterling area's gold and dollar pool. This may justify discrimination as between sterling and non-sterling imports, depending on the state of the common reserves. But one fault of the sterling area system is that there is no built-in incentive for the members to discriminate in the common interest, any discrimination being contrary to a particular member's direct self-interest (other than Britain, the banker, who takes all the buffeting).

11. While there is no longer any formal discrimination against Japan, there is the *threat* of discrimination if imports from Japan become too large. The informal or "threat" technique may have effects similar to formal discrimination.

There is even in that case only limited monetary ground for discriminating as between different non-sterling sources. A good part of sterling held outside the dollar area finds its way into the European Payments Union where it is 75 per cent convertible into dollars. There is some basis for discrimination here, if the resulting increase in the total costs of our imports is worth the reduction in the dollar content of this cost. But sterling held by residents outside the area is also convertible into dollars on the foreign exchange markets at only a slight discount. The value of sterling is maintained on these markets through deliberate Bank of England policy. The discount is hardly great enough to justify any discrimination against dollar goods.¹²

But beyond (a) Australia's direct self-interest (calling for *no* discrimination) and (b) the sterling area interest (calling for discrimination primarily against non-sterling imports as a whole), there is (c) the world interest, requiring the minimizing of trade restrictions all round for balance of payments reasons. This requires us to discriminate on the basis of each country's overall balance of payments situation.¹³ We would normally discriminate most against the dollar and the D-Mark, and most in favour of France, Japan and (at present) New Zealand. An efficient international monetary system would provide some incentive for individual countries to discriminate in this manner.

It is difficult to see any economic justification for discrimination against Japan. There was a time when the sterling area was in bilateral deficit with Japan, when these deficits had to be settled in dollars, and when sterling held by other non-sterling countries was *not* convertible into dollars. Then it was correct to discriminate against both the dollar and Japan. Now the sterling area is in surplus with Japan and we can lose dollars through imports from any non-sterling source. Furthermore, Japan, being a country which has difficulty in balancing her payments, ought to be discriminated in *favour* from the cosmopolitan viewpoint. In addition Japan happens to be a particularly good customer of ours, and we would be a beneficiary from her prosperity. So we have every economic motive for being pro-Japan in international counsels. Discrimination against Japan has been justified for protective reasons. This means we buy in dearer markets so as not to under-sell our home producers. It is a technique of protection which worsens our terms of trade, at least on the side of imports. Is it not better to buy

12. Furthermore, is it right for Australia to discriminate when other important members of the sterling area do not? On the one hand, a temporary improvement in the sterling area's reserves due to Australian discrimination may be offset by relaxation of dollar controls on the part of other countries. On the other, in so far as discrimination is a necessary sacrifice, moral (or "international distribution-of-income") grounds may justify Australia making greater sacrifices than (say) India.

13. The theory underlying this cosmopolitan criterion originated with Professor Ragnar Frisch ("On the Need for Forecasting a Multilateral Balance of Payments", *American Economic Review*, September 1947) and Mr. J. M. Fleming ("On Making the Best of Balance of Payments Restrictions on Imports", *Economic Journal*, March 1951), and is set out most thoroughly in J. E. Meade, *Trade and Welfare*, Chapter XXXIV.

from the cheapest market and use a non-discriminatory tariff to keep the home producer in business? It provides a gain to the Treasury and no loss to the Australian producer or consumer (the loss being to the former British supplier).

More generally, discrimination against imports from Asian countries is a particularly undesirable policy. Such discrimination is usually founded on the "cheap labour" argument. But, as has been pointed out above, such discrimination, whether on the basis of products or countries, is not even in the Australian interest. If we can obtain certain goods cheaply from abroad, we should be delighted; if it means that Australian industries depending primarily on unskilled or semi-skilled labour will find it hard to compete, this reflects the unsuitability of the Australian environment for these particular industries. But more important, such discrimination makes it more difficult for Asian countries to develop their economies on the basis of foreign trade; it can negate all the benefits of generous aid programmes.

IV

Exports and Depreciation

The case for depreciation as a device for improving the balance of payments, relative to tariffs or import restrictions, is that it encourages exports as well as cutting imports. A 25 per cent uniform tariff combined with a 25 per cent uniform export subsidy would yield the same result as a 20 per cent depreciation.¹⁴

Can we imagine what such a uniform export subsidy would do? To begin with we must assume that it would replace all existing export subsidies and home-price schemes. At present exports of dairy products, sugar, dried fruits, and some minor items are subsidized, directly or indirectly. Wheat benefits from low railway charges and is drawing on a government-guaranteed stabilization scheme this year.¹⁵ On the whole it is the labour-intensive agricultural industries which have suffered most from the tariff-import restrictions policy and which get the most assistance.¹⁶ It seems probable that if a uniform export subsidy replaced all existing export subsidies, a significant stimulus would

14. . . . apart from the effects on invisibles and the capital account. By failing to depreciate, and taxing imports and subsidizing exports instead, invisible imports are over-encouraged. Professor Meade (*Economic Record*, November 1956) has given the example of freight rates. A depreciation would reduce freight rates on coastal shipping relative to sterling freight rates from London; thus it would help to divert Western Australian demand on to the manufactured products of the Eastern States shipped in Australian ships. A depreciation would also reduce the sterling (or dollar) value of profit remittances on foreign investment in Australia.

15. In addition, meat is subsidized by Britain as a result of the 15-year Meat Agreement, part of our sugar exports are subsidized by the British consumer through the Commonwealth Sugar Agreement, and certain products (sugar, dried fruit, canned fruit, canned beef, apples) benefit effectively from Preference. But these schemes need not necessarily be replaced by a uniform export subsidy, although the uniform subsidy would certainly make the industries less dependent on them.

16. See I. Shannon, *Rural Industries in the Australian Economy* (Cheshire 1955).

be provided only for wool, wheat and meat. The effective subsidy for dairying would actually fall, suggesting that this industry is too labour-intensive for Australia.

The question then remains whether increased returns to wool, wheat and meat producers would (a) lead to increased output, which (b) could be sold without undue fall in prices. If so, then a uniform import tariff cannot be regarded as a sufficient long-term balance of payments device. It would unduly deprive us of the benefits of international trade. It ought to be supplemented by suitable measures to encourage exports.

It is probable that, taking a long view, production of rural products would respond to higher prices and (with limited exceptions) could be sold without severe price drops. An assessment of the price elasticities of demand and supply of our exports must be one of the main elements in forming a suitable trade policy. Here only a few queries can be raised: (a) Does not recent experience suggest that the long-term supply elasticity of wool is high? Prices rose in 1950-1 and several years later output increased sharply. The question is how much of this rise in output was the result of rural investment by graziers of the high earnings of earlier years, and how much was due to myxomatosis and the development of new methods of pasture improvement. It seems that self-financing makes long-term supply elastic.¹⁷ (b) Taking into account the synthetics-research effect, and more generally the increased scope for substitution between fibres, is not the long-term demand for wool elastic? (c) Is there not scope for increased earnings from wheat not just by improving the yield per acre (and ruling out increased acreage), but by improving the quality, grading, etc., all of which might become economical with higher prices?

If higher returns to some primary producers would *not* lead to substantial rises in output, or if the extra output could only be sold at much lower prices, there would be no point in an export subsidy. A devaluation would in those cases have to be associated with an offsetting export tax. This tax would forestall an unnecessary income redistribution. But it is justified only if (a) primary production is not very responsive to higher returns, or extra output could not be sold

17. We have been taught in the textbooks that the supply curve has an income and a substitution element. A rise in prices represents a rise in real income; some of this will be taken out in increased leisure, so that the income effect of a rise in prices leads to a fall in output. On the other hand the substitution effect raises output, how much depending on the scope for substituting one product for another in production. The substitution effect makes the supply curve elastic, and the income effect inelastic (or, taken by itself, gives it a negative elasticity). It is a familiar argument that the income effect in agricultural supply is high so that agricultural elasticities are low or even negative (e.g. Australian wheat in the depression). But is not there also a *long-term* income effect which *raises* the supply elasticities? High incomes due to high prices mean high savings; high savings are eventually invested and so lead to higher output. The crucial link in the chain is that the savings are invested wholly or mainly in the same industry. So there needs to be some imperfection in the capital market. Behind it is the same cause as underlies the low substitution effect—immobility of factors of production, whether existing or new.

readily, and (b) the relative incomes of primary producers are already adequate.^{18, 19}

Perhaps the most important effect of using tariffs and import restrictions rather than depreciation as balance of payments devices is that exports of manufactures are discouraged. In spite of the opportunities which seem to lie in South-East Asia and spasmodic official campaigns, it is improbable that our exports can make much progress until our relative cost level is brought into line. This is the strongest single argument in favour of depreciation. More and more the issue turns out to be not manufacturing *versus* rural industry, but what the appropriate pattern of manufacturing industry is to be. Manufacturing countries are the greatest traders, and one can visualize the export of capital-intensive cars and steel, and the import of labour-intensive textiles, fancy-goods, and the like. By the failure to depreciate we deprive ourselves of the benefits of this sort of division of labour. This aspect is connected with the infant-industry argument. On the one hand restriction of imports develops manufacturing industry for the Australian market, and assuming industrial costs do fall with time and scale, makes it eventually better able to compete on export markets. But on the other hand entry into South-East Asia also yields increasing returns and the later we make the entry the more likelihood there is of letting others reap the benefits of growing markets. Which of these effects is more important?

V

Policy

We can conclude with a set of simplified recommendations following logically from the above discussion.

Step I. Assimilate the import restrictions system in the tariff system by gradually replacing import restrictions with tariffs.

Step II. Establish a standard tariff rate to begin with (say 20 per cent), and gradually bring up the low tariffs and level off the high ones, until finally (with some exceptions) a uniform tariff operates. Most of the tariffs replacing import restrictions could from the beginning be at the standard rate. All the exceptions should be quoted as margins above or below the standard rate. Valid grounds for such exceptions, applicable in limited cases, have been discussed

18. The Australian tariff traditionally is a method of "painless extraction" which keeps down land values and redistributes incomes from primary producers towards the urban sector. (See J. B. Brigden and others, *The Australian Tariff—An Economic Enquiry* (M.U.P. 1929) and A. J. Reitsma, "Trade and Redistribution of Income. Is There Still an Australian Case?" *Economic Record*, August 1958). But this is an argument only for a *uniform* tariff (not for particular tariffs), and it comes down to the same as arguing for devaluation plus a uniform export tax, except that the tax may not be politically painless.

19. Suppose we used some of the revenue from the export tax to subsidize rural investment. Then a stimulus to rural output might be obtained without making primary producers wealthier first. But will primary industry then become too capital-intensive, or will the investment subsidy only offset present imperfections in the capital market?

above. Tariff Board reports should be expected to justify these margins. Where + margins for infant-industry reasons remain (and few really should) they should be converted into sliding rates.

Step III. Vary the standard tariff rate with the balance of payments situation, remembering that reserves should cope with really short-term deficits.

This may be enough to begin with. And if a flexible, uniform tariff is *more* than can be stomached, a guide to tariff-making still emerges: There is a basic, though variable, tariff rate which offsets the higher general level of Australian costs, and deviations + or - from this rate require specific justification.

Though quite radical in their implications, these suggestions are only a second-best. They assume realistically that devaluation is not in the political vocabulary. But perhaps it should be put there, and we can go on to

Step IV. Gradually even out existing export subsidies (direct and indirect) and bring them to a standard rate. This will require a survey of methods of subsidization, and reorganizing these methods to put them on comparable bases.

Step V. If, after a time, the balance of payments situation seems to continue to require a substantial uniform tariff and export subsidy, then one day (a) remove the uniform tariff and export subsidy, (b) place an export tax on wool and any other products, to the extent that they had not received a subsidy to begin with and are not considered to need one (due to low elasticities or distribution-of-income effects) and (c) depreciate. Variations in a uniform tariff could still be used to deal with middle-term balance of payments difficulties, adequate reserves coping with short-term ones.

This is the step-by-step approach to the economic optimum. The alternative is to take the last steps by storm first. If the present disequilibrium in the balance of payments is recognized as fundamental, then depreciate *first*, and at leisure adjust the tariffs and remove the import restrictions and export subsidies. Unnecessary income fluctuations and later protests would be avoided if any export taxes were imposed simultaneously with the devaluation. Logically, the uniform tariff rate (towards which individual tariffs would be gradually adjusted) should be somewhere near zero, ready to be raised for middle-term difficulties. But near-Free Trade seems an even more difficult proposition than a uniform tariff, and a practicable policy might be (a) to devalue sufficiently for import restrictions and export subsidies to be removed, and (b) to work towards a uniform tariff somewhere near the *average* of present tariffs.

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THE PROSPECTS FOR COLLECTIVE BARGAINING IN AUSTRALIA

In recent years, the desire to "work outside the arbitration system" appears to have strengthened in trade union circles.¹ This is not surprising. Since 1953, the average level of real wage rates has virtually stood still and the real basic wage has fallen by nearly 5 per cent. Moreover, recent federal basic wage judgments give unions little hope of a brighter future. The system of automatic cost-of-living adjustments has been firmly rejected; and the general tone of the Commonwealth Arbitration Commission's judgments is one of caution and conservatism in wage adjustments. Understandably enough, the predominant principle of wage policy in both inflation and recession is wage restraint. As the Australian economy is likely to be tending towards one or other of these situations all the time, and, with continued economic development, towards inflation most of the time, the concern of trade unions for the future can well be appreciated. Discontent with wages is strongly reinforced by bitter opposition to the punitive powers of the Commonwealth Industrial Court and to increasing government intervention in the internal affairs of unions.

However, there are reasons for believing that the dissatisfaction of the trade union movement with the arbitration system probably goes a little deeper than all this. There appears to be a growing conviction, perhaps not as clearly and as strongly articulated, that "free"² collective bargaining provides more positive inducements for better industrial relations.³ Collective bargaining arrangements have, of course, operated for many years in a number of industries⁴ in Australia even though in most of these the awards of industrial tribunals have formed the basis of agreements. It would be surprising indeed if Australian trade union leaders and employers⁵ were altogether oblivious of the virtues of a system of wage determination which is highly prized by both unions and management in the United Kingdom and which, in the United States, the parties are required to use by law.

Do these signs portend any significant change in our system for settling industrial disputes? What are the prospects for a widespread

1. See, for example, *A.C.T.U. Bulletin*, Vol. 4, No. 1, p. 1; Vol. 4, No. 2, p. 4.

2. "Free" in the sense of not being subject to compulsory arbitration in the manner of the Australian system. Henceforth "collective bargaining" will denote "free collective bargaining" in this sense.

3. See H. J. Souter, "How Do Australian Industrial Relations Compare with Other Countries" in K. F. Walker (ed.), *Unions, Management and the Public* (University of Western Australia Press, 1955).

4. The Broken Hill metal mining industry is one of the best examples. (See K. F. Walker, *Industrial Relations in Australia* (Harvard University Press), 1956, Chapter IV.) Others are in paper manufacturing, newspaper printing, brewing, and more recently, in building and construction. In the latter, collective bargaining agreements were introduced by American construction companies. Since 1956, an agreement has operated between a number of unions and employers' associations in the building industry in the Greater Melbourne area.

5. D. G. Fowler, *The Employers' Review*, Vol. 29, No. 5, October 1957.

extension of collective bargaining? What is the case for more collective bargaining in Australia? The last question will be considered first.

II

Collective bargaining is the method of fixing the terms of employment and settling grievances arising from those terms by *negotiation* between union(s) and employer(s). It is understood that both parties reserve the ultimate *right* to use economic coercion through strike or lockout. Indeed, this understanding may be an important factor in stimulating the parties to an agreement. The use of third party intervention through mediation and conciliation to assist in the settlement of the dispute is consistent with collective bargaining since the terms of settlement are still by agreement of the disputing parties. There is, to use the popular phrase, a "meeting of the minds" of unions and employers. Under arbitration, on the other hand, the third party determines the terms of settlement. He makes a ruling or an award which, however, need not be acceptable to the disputing parties. There need not be a meeting of the minds. Nevertheless, voluntary arbitration, at least on the interpretation of the terms of an agreement, may still be compatible with collective bargaining in so far as both sides voluntarily agree to bring differences on specific issues before the arbitrator and to be bound by his award. Compulsory arbitration, however, falls more in the category of government regulation because not only are the disputing parties compelled to meet the arbitrator, but they are legally bound to accept his award on any disagreement between them. Compulsory arbitration is a negation of collective bargaining; and, therefore, the case for collective bargaining may be viewed as the case against compulsory arbitration.

What, then, are the disadvantages of compulsory arbitration as compared with collective bargaining?⁶ These are to be found both in the *process* by which the terms of settlement are reached and in the *nature* of the settlement. Under compulsory arbitration it is the business of each of the disputing parties to impress a third party with the strength and justice of its claim. For tactical reasons, it is usually desirable for each side to take an extreme position and to stand by it. This process tends to exaggerate the differences between the parties, and, specially when they are represented by lawyers, to discourage any need for closer and constructive understanding of each other's problems.

The process of collective bargaining, on the other hand, is one of negotiation between the parties, if necessary, assisted by a conciliator.

6. Professor Walker (*op. cit.*, p. 13) has warned against discussion of compulsory arbitration as if it operates in a vacuum. True, the value of compulsory arbitration will depend on the environment in which it operates; and the environment itself may be influenced by the existence of compulsory arbitration. But there is much to be gained by analysing *in vacuo* the different methods of settling disputes. To agree, for example, that compulsory arbitration has certain undesirable features does not necessarily mean that it should be avoided in a particular situation, or that it is not the best possible arrangement.

The parties deal with each other and must impress each other both with the merits of their respective claims and their strength to stand by them. It is a process not only of mutual coercion but also of mutual enlightenment. Concession is made in return for concession, emphasizing the mutual dependence of the parties. The object of negotiation is to narrow differences and thus to reach a mutually acceptable settlement.

But arriving at the terms of employment is less than half the problem of industrial relations. These terms must be administered and interpreted in the day to day relationship of the parties. It is here that the *nature* of the settlement is significant. Under compulsory arbitration the settlement is by a legally enforceable award. This award results from the deliberations of the third party on the claims and counterclaims of the disputing parties, who are, however, not answerable to their constituents for the terms of settlement. Nor are they responsible to each other to ensure that these terms are harmoniously carried out. It is the responsibility of the law through tribunals not only to make the terms of employment but also to enforce them, if necessary. The parties are not bound to approve the award. The most that can be expected of them is that they will resign themselves passively to accept the arbitrator's ruling. It is thus not the responsibility of trade union leaders to allay any discontent among the rank and file about the award. Indeed, they may well find it expedient to accentuate discontent in order to strengthen their hold on the rank and file. On the other side, management is entitled to insist on the letter of the award being observed, to apply it ruthlessly and to ask for legal sanctions for any breaches of the award.

This state of affairs contrasts sharply with the nature of the settlement arrived at by collective bargaining. The settlement here is by agreement. The agreement is the product of negotiations carried on by the disputing parties, on whom rests the responsibility for the agreement. Each is expected to honour the terms of the agreement and to ensure their observance by its constituents. Moreover, it is the responsibility of both parties to settle grievances arising in the course of the agreement, which may even include a formula on the procedure to be followed for settling these grievances.

In practice, these contrasting features of compulsory arbitration and collective bargaining may not apply with such sharpness in all cases. Nevertheless, the outstanding difference between compulsory arbitration and collective bargaining is in the degree of responsibility imposed on the union and management for the settlement of disputes and for the manner of observance of the terms of settlement.

Three other weaknesses of compulsory arbitration should be noted. First, while collective bargaining assumes that the right to strike or to lockout must be conceded, compulsory arbitration assumes that these rights do not exist. In practice, of course, these rights are exercised even under compulsory arbitration, and the law must punish offending parties or close its eyes to such offences. The latter course is in most

cases expedient but legally anomalous. The former is legally proper but in its effect on industrial relations, anomalous, because the normally accepted notions of crime and punishment are not applicable in industrial relations. The right to strike, for example, is the very basis of trade unionism. A blanket denial of this right is regarded as a threat to unionism itself. Punishment for the exercise of this right may reduce the incidence of strikes but it will certainly accentuate industrial unrest. For after all, the relationship between union and management does not end with the imposition of punishment. Both must continue to work with each other. This is the dilemma which faces compulsory arbitration and which is one of its notable weaknesses in practice.⁷

Second, the high costs to the parties, and hence to the nation, of arbitration proceedings. This is a feature of the Australian system with its extensive use of legal procedure and personnel, but it is not a necessary feature of compulsory arbitration. The high degree of legalism associated with the Australian system results partly from the constitutional problems of Australian federalism, but also from the view that industrial problems should be solved by legal procedure.

The third difficulty concerns the competence of a third party, an outsider, to take on the task of fixing the terms of employment. The dominant legal basis of Australian arbitration, as has just been suggested, may be ascribed partly to the belief that the judicial process is applicable in industrial matters. Certainly, the *interpretation* of the terms of employment lends itself to a judicial process and as such it does not require a first-hand and deep knowledge of the economic and technical circumstances of the firm or industry. It is sufficient for the third party to examine evidence presented to him by the disputing parties and, on this basis, to make his judgment.

The *making* of the terms of employment, however, is a very different matter. It is a legislative rather than a judicial process. Under collective bargaining, the terms are arrived at by pressure, compromise and self-interest. But a competent "legislative" arbitrator must in the first place be as familiar with the economic and technical aspects of the industry as the disputing parties; secondly he must be able to formulate clear-cut principles on which to base his award; and thirdly, he must be able to apply these principles consistently and unequivocally to arrive at the "right" and "just" award. Even if the first requirement is fulfilled, it is doubtful whether the last two will usually be satisfied. It is for this reason that we may expect the decision of a wise "legislative" arbitrator to be based on a shrewd assessment of an acceptable award, a compromise decision close to what the disputing parties themselves

7. "The problem to be solved, either as a matter of theory or as a matter of practical necessity, is at bottom always and everywhere the same. How can the right of combined action be curtailed without depriving individual liberty of half its value; how can it be left unrestricted without destroying either the liberty of individual citizens or the power of the Government?" Dicey, *Law and Public Opinion in England, 1919* quoted by C. O. Gregory, *Labor and the Law* (Norton, New York), 1949. These questions deserve more attention than they have received in Australian industrial legislation.

would have reached, with the difference, of course, that the latter do not in this case bear the responsibility for the decision. The practice of Australian arbitration tribunals of giving lengthy reasoned judgments for their awards is a pretentious and inappropriate application of judicial practice to legislative action.

A feature of Australian arbitration is the emphasis on "the public interest". In so far as the public interest means a mutually acceptable and speedy settlement of the dispute, a compromise decision should be the objective of the arbitrator. But arbitration authorities have in recent years added the over-riding condition of consistency with the public interest. If, for example, a wage increase is likely to generate inflation, it is not regarded as being in the public interest and, therefore, it should not be awarded. Tribunals have refused to accept for registration as consent awards agreements freely entered into by unions and employers on the grounds that they might stimulate wage demands elsewhere and add to inflation.⁸

Whether this is an appropriate role for industrial tribunals entrusted with the task of preventing and settling industrial disputes is a debateable question. There are good grounds for believing that the "public interest" principle will not prevent general wage increases from taking place if effective demand is at an inflationary level. What it will do, however, is to produce inequities in the wage structure between those industries which stick to award rates (mostly government authorities) and those which pay in excess of award rates. The weapons of anti-inflation reside in budgetary and monetary policies rather than with arbitration tribunals.

The case against compulsory arbitration then, is not that it conduces to high or low wages, but that it denies the main benefits of collective bargaining: the development of responsible action and a constructive relationship between union and management. It has, furthermore, certain inherent difficulties—the dubious use of legal sanctions, high costs of operation, and the competence of "outsiders" in the formulation of the terms of employment. It is possible that prompt intervention and the imposition of arbitration awards reduce the incidence of stoppages. But the state of industrial relations can hardly be assessed by the time lost in stoppages alone.

III

In view of these disadvantages of compulsory arbitration, should the provision for its operation be withdrawn entirely? Two problems arise. First, what if one or both parties prefer compulsory arbitration anyhow? The preferences of the parties are important but should they be the deciding factor of the form in which disputes are settled? If collective bargaining has basic virtues, should the parties not be in-

8. The outstanding case recently is the agreement in the building industry in the Greater Melbourne area which both Federal and State tribunals refused to accept for registration.

duced to use the process of collective bargaining? The second problem arises in connection with disputes or stoppages which create conditions of national emergency and, therefore, have a serious impact on the public interest. No responsible government could stand by idly in the name of collective bargaining. Even "free" collective bargaining must imply some limitation in the use of the weapons of economic coercion. Nevertheless, the manner of government intervention even in emergency disputes is important. In considering these problems, it may be instructive to analyse briefly the nature of the role of public intervention in disputes in the United Kingdom and the United States.

The rationale of government intervention in industrial disputes in the United Kingdom is not to prescribe and enforce the terms of employment but to provide a maximum inducement for the disputing parties to reach agreement by voluntary negotiation. This inducement arises from the flexibility and uncertainty of the form and timing of government intervention. There is no set ritual for government intervention either directly or through its agencies. Provision is made for conciliation, voluntary arbitration, the establishment of a committee of inquiry and even semi-compulsory arbitration (in the sense that the award is not legally binding on the parties). Where the institutional facilities for collective bargaining are inadequate, there is provision for the setting up of Wages Boards. But a great deal of discretion rests with the Minister of Labour. Neither union nor employer can be sure of government intervention and therefore each has a great inducement to find the accommodation in voluntary negotiation assisted perhaps by a conciliator.⁹

It is true, of course, that the nature of legal intervention in the United Kingdom has partly been influenced by the attitudes of unions and employers about the desirability of voluntary agreement.¹⁰ But it is also a reflection of public opinion and government policy which has deliberately refrained from closer regulation of industrial relations,

9. "It is through the interposition of the Minister between the parties to the dispute and the Tribunal that the law gives effect to what have been called fundamental principles: the rule that autonomous machinery has priority over statutory machinery and that voluntary is preferable to compulsory settlement. If there is any chance of settlement through autonomous negotiation or arbitration, the Minister must refer the case to that machinery, and if he has done so without positive result he still has a discretion whether or not eventually to guide it into the channels of compulsory arbitration. If there is from the outside no prospect of autonomous settlement, he may still try voluntary settlement through statutory machinery, e.g. through his conciliation service, through the Industrial Court, through *ad hoc* arbitrators, or through the appointment of a committee of investigation or court of inquiry. . . . These provisions . . . have proved to be of outstanding importance for the shaping of industrial relations, in the course of the last thirteen years. As a result of their operation, compulsory arbitration has not in this country killed voluntary bargaining." O. Kahn-Freund, "Legal Framework" in A. Flanders and H. A. Clegg, *Industrial Relations in Great Britain* (Blackwell, Oxford), 1956, pp. 95-96.

10. In 1940, under emergency conditions, provision was made under Order 1305 for compulsory arbitration by agreement of the Trades Union Congress and the British Employers' Confederation. Again by agreement of these parties, the Order was modified in 1951, to remove any restriction on the right to strike or to lockout. (See O. Kahn-Freund, *op. cit.* p. 92.)

leaving it to economic and social pressures to exercise the necessary restraints on unions and employers.

The American scene presents interesting similarities and differences to the British. It is similar in its reluctance to impose governmental settlement on disputing parties. Ample facilities are provided for conciliation and voluntary arbitration, but even under conditions of emergency there is no provision for compulsory arbitration. The President has powers to intervene in emergency disputes, to order an 80-day injunction against a stoppage, to appoint a committee of inquiry and, finally, if no settlement is in sight, to order a strike vote of union members by secret ballot. If the vote favours strike action, a stoppage may take place. However, Congress may order the plants affected by the stoppage to be "seized" by the government. As strikes in government undertakings are illegal, the act of seizure is in effect an order to return to work. But no settlement is imposed on the parties who are expected to continue negotiations. The object of seizure is to relieve the state of emergency by the return to work but also by making conditions sufficiently irksome¹¹ for both unions and employers to provide them with the necessary inducement for a mutually acceptable agreement. But seizure is not lightly undertaken. The emergency must be real. Furthermore, like the British system the uncertainty of government intervention plays its part in inducing both sides in the dispute to continue negotiations.¹²

However, there is also an important contrast with the British system. Whereas British law does not require union and employers to bargain collectively, American law imposes upon both "the duty to bargain". Much of the intrusion of the government in industrial relations in the United States springs from this duty and its performance according to prescribed rules of fairness. The basis of this legal requirement is the need felt in the early Wagner Act period of the '30's by a government sympathetic to the ideals of unionism to break down employer opposition to collective bargaining; and later, in the light of experience, to impose under the Taft-Hartley Act, upon both unions and employers rules of fair conduct in collective bargaining. What has been described as a "shot-gun marriage" between labour and management clearly requires more extensive legal intervention to ensure its smooth operation than the voluntary acceptance of collective bargaining principles in the United Kingdom.

Nevertheless, the outstanding common feature in both countries is the need felt by the public and government for collective bargaining

11. The unions are deprived of the strike weapons; their claims may be left suspended and it has also been suggested that union dues may be placed in a frozen account. On the side of management, the prying presence of government officials in the plant, the possibility of price and profit control, may provide the inducement for compromise and settlement.

12. An outstanding application of the principle of flexibility and uncertainty is found in Massachusetts where the State law was formulated on the advice of Professor Slichter. See *Massachusetts Proposals for Better Industrial Relations: The Report of the Governor's Labor-Management Committee* (Boston: The New England Council, 1947).

but, more importantly, the provision of governmental machinery for settling industrial disputes which will not impair the prospects of the disputing parties reaching a mutually acceptable agreement.

An appreciation of this fact provides, by way of contrast, the key to an understanding of the sparseness of collective bargaining in Australia. The logical basis of the Australian system of compulsory arbitration is primarily the speedy "settlement" of industrial disputes rather than the encouragement of collective agreements. This attitude derives from the troubled years of the 1890's, when public opinion, greatly disturbed by lengthy stoppages in strategic industries, demanded government intervention to end such stoppages if necessary by the imposition of the terms of settlement. For a few years, there was virtually a breakdown in a few key industries in the relationship between unions and employers, the latter refusing to deal with unions and insisting on the freedom of contract. Under these circumstances, compulsory arbitration not only provided a means of settling disputes but also rehabilitated and stimulated unionism. The years following the New South Wales and Commonwealth Arbitration Acts saw a rapid development in the number and membership of unions. Australian governments could, of course, have taken the stand of the American government in the '30's when, under the Wagner Act, it compelled employers to recognize and to deal with unions. This would have been one way of assisting the growth of unionism and collective bargaining. Instead, they took the alternative step of intervening in disputes and freely imposing legally enforceable awards on the disputing parties, requiring at the same time that these parties be registered associations. Thus both the Wagner Act and the Australian acts were intended to develop collective bargaining. But while one was careful to avoid government agencies being drawn into prescribing terms of employment, the other freely provided government machinery for making and enforcing awards. The result in one was collective *bargaining*; in the other, industrial *regulation*.

The early Australian preference for speed in the settlement of disputes by imposing government awards can be understood and justified in terms of the long drawn out emergency stoppages with widespread economic loss and personal inconvenience, and with the very existence of trade unions threatened by the refusal of employers to take part in collective bargaining. Why, long after union and employers' associations had become firmly established, should this preference for compulsory arbitration have been maintained?¹³

Three points may perhaps provide some explanation. First, the existence of a morbid fear of stoppages in the public mind coupled with an inadequate appreciation of the virtues of collective bargaining. Second, the naive hope for a "new province for law and order" in

13. Under the 1956 Act, the Commonwealth Government appointed a number of conciliators who had powers of arbitration only by the consent of *both* parties in the dispute. This innovation has proved successful but, of course, so long as the other facilities of compulsory arbitration are readily available, conciliators will have very limited scope in the settlement of disputes.

industry through compulsory arbitration and the renunciation of the weapons of economic coercion. The failure of legal sanctions to prevent stoppages may have shaken but certainly not eliminated the widespread belief that legal processes are eminently suitable for resolving industrial conflict. And finally, the misguided belief that despite the provision for compulsory arbitration, parties are free to enter into voluntary arrangements. Indeed, the system provides that the resources of conciliation should be exhausted before arbitration is attempted.

This view misses two fundamental points. First, so long as both parties are aware that the facilities of compulsory arbitration will be readily available, voluntary negotiation and conciliation becomes, on most important issues, a formal and fruitless phase. The suspicion that the other party is likely to take the dispute up to arbitration will usually be strong enough to stifle any genuine negotiation.¹⁴ And so long as the dispute falls within their jurisdiction, tribunals are not in the habit of creating doubts as to their readiness to arbitrate. The vital element of uncertainty, so much a feature of British and American practice, is virtually absent in Australia.

Second, the ready availability of compulsory arbitration has conditioned both unions and employers to the limited requirements of the system. There is no need for union or management to have a sophisticated understanding of the nature of industrial conflict and their accommodating role in this conflict. The industrial relations "expert" on the side of management is the industrial officer and his main task is to understand and apply the awards of tribunals. On the union side, this job is performed by the secretary. Claims and counterclaims, especially if they are important, and legal problems relating to the interpretation of awards—these are usually handled by lawyers employed for the occasion by union and employer. The art of collective bargaining is unknown and unnecessary.¹⁵

Thus the absence of any legal hindrance to collective bargaining and, indeed, even the earnest provision of conciliation, are not sufficient conditions for the development of collective bargaining so long as the facilities for compulsory arbitration are readily available to one or both parties in a dispute.

14. Cf. the frank admission of an employer representative: "... Reflect on human nature for one moment and it becomes obvious that the impelling desire to reach an agreement will not be present if one side feels it will be no worse off if the problem goes to arbitration, and indeed it might be better off". R. G. Fry in *Unions, Management and the Public*, K. F. Walker (ed.) (University of Western Australia Press, 1955), p. 32.

15. It has been suggested (O. de R. Foenander, "The Achievement and Significance of Industrial Regulation in Australia", *International Labour Review*, February 1957, p. 117) that the time for abandoning compulsory arbitration would be when employers and unions show a sufficient sense of responsibility. This argument overlooks the point that just as a muscle atrophies from want of use, so compulsory arbitration, by reducing the need for a sense of responsibility in industrial relations, inhibits the development of organization and skills necessary for the growth of collective bargaining. See Kingsley Laffer, "Australian Compulsory Arbitration", *International Labour Review*, May 1958, for a critical view of Dr. Foenander's article.

We may now return to the two questions posed at the beginning of this section. What if both parties prefer compulsory arbitration anyhow? What if a stoppage produces conditions of emergency? We have argued that the preferences of the parties may simply have been conditioned by the ready provision of compulsory arbitration. Such preferences should, therefore, not be regarded as a necessarily sound basis for operating the machinery for settling disputes. The value of collective bargaining should be judged on its merits. In the same way, we would presumably not take too seriously the proclamations of a highly protected industry on the evils, from the national point of view, of foreign competition. There will be, of course, areas in industry where the absence of adequate organization among employees may necessitate state intervention along the lines of a wages board; and it may be that in the public service and certain public utilities where it may be desirable to avoid political entanglements, similar provisions should be made for wage determination and other industrial matters. But these forms of government intervention should be ancillary to the predominant practice of collective bargaining, and not the other way round, as at present in Australia.

On the second problem, if union and management are prepared to force their dispute to a showdown even to producing a national emergency, clearly government intervention cannot be avoided. But two points should be stressed. First, the emergency must be real, involving the risk of widespread economic loss or danger to life and health, not just discomfort. Second, even in emergency disputes, there are differences in the nature of government intervention. It could take the form of a return-to-work order or the use of troops to maintain the service but leaving the parties to work out an agreement. Alternatively, the government or its agency may impose a settlement on the parties by compulsory arbitration. The latter form of intervention should be avoided if possible, but if the parties in an industry do not learn to work out an accommodation process in spite of successive emergency crises, there is little alternative but to accept close government regulation as an unavoidable evil. The Australian stevedoring industry may be in this category. But the most gloomy expectations would not justify the extent of government regulation of industrial relations in Australia.¹⁶ For it is reasonable to suppose that for most unions and employers survival must be a primary objective, and ways and means will be found to achieve this objective even without government intervention.

IV

What, then, are the prospects for collective bargaining in Australia? The extension of collective bargaining requires first and foremost a profound change in the approach of industrial tribunals to dis-

16. Presumably most emergency disputes (involving industries such as stevedoring, shipping, rail transport) could be handled directly by the federal government under its Trade and Commerce power. See O. de R. Foenander, *Studies in Australian Labour Law and Relations* (Melbourne University Press, 1952), p. 7 *et seq.*

putes. Their primary objective should be to *assist* in the formulation of an agreement mutually acceptable to the disputing parties and for which the latter bear the responsibility. In other words, their primary objective should be to promote the development of collective bargaining rather than merely to impose a speedy but formal settlement of disputes. Such a role would necessitate extreme reluctance to use the powers of compulsory arbitration even if a stoppage develops or continues unsettled.¹⁷ This would throw the weight of settlement on the disputing parties.

Our tribunals are so steeped in the traditions of compulsory arbitration that, although it would be theoretically possible, in practice it seems highly unlikely that a fundamental change in their outlook would take place without specific legislative provisions, e.g. the right to resort to compulsory arbitration only with the consent of the Minister of Labour. If properly administered, this would provide the system with the necessary element of uncertainty to ensure that collective bargaining was not inhibited.

There are two difficulties in the way of such legislative provisions. First, there is no indication that the general public wants any such change in the machinery for settling disputes. This is not because the public has given any serious thought to the problem but the opposite. Compulsory arbitration and extensive government regulation of industrial regulation has become one of the facts of life which must not be questioned.¹⁸ The increase in stoppages which is bound to take place during the period of adjustment to collective bargaining is likely to harden public opinion in favour of compulsory arbitration. It would need a strong, sophisticated and patient Department of Labour to educate the public to the virtues of collective bargaining and at the appropriate time to formulate the necessary legislation to restrict the use of compulsory arbitration.

The second difficulty relates to the constitutional problems of the Australian federal system. The suggested reform in the operation of the machinery for settling industrial disputes would have to be carried out on both the state and federal levels. Since party politics play an active part in the provisions for industrial regulation, it would require an unusual degree of unanimity among the contending political parties and among federal and state governments to produce the necessary legislative changes.

It was suggested earlier that the preferences of employers and unions should not necessarily be the basis upon which government machinery for settling disputes should operate. It must be plain, how-

17. Ironically enough, "inefficiency" in the operation of tribunals has been a factor in the development of collective bargaining in the Melbourne building industry. Elsewhere it has produced "threats" of direct negotiation. See *The Worker*, October 31, 1955.

18. It is sometimes suggested that there should be more of it. The Prime Minister, Mr. Menzies, is reported to have said that the Commonwealth tribunal should be empowered to fix awards and industrial policy without there first having to be an industrial dispute. "The present system means that you must have your war before you can have your peace." *The Age*, Melbourne, September 12, 1958.

ever, that in practice these preferences will have a major influence on the policies of the major political parties. In the early stages of arbitration, employers were generally against the system of compulsory arbitration for the very reason that the unions were in favour of it—that it required unions for its operation and hence stimulated and assured the existence of unions. However, once unionism had developed in strength over large areas of industry, the attitude of employers changed radically. In spite of dissatisfaction with occasional judgments, employers have tended to regard the system as their main defence against excesses of union power. This is a little difficult to understand. Are the economic coercive powers of employers really so feeble in the face of union strength? If one views the position of the *individual* employer vis-a-vis a union or a combination of unions, his diffidence to face a world without compulsory arbitration is understandable. But there are large numbers of employers' associations in this country whose very existence was in many cases stimulated by the growth of unionism. We come back to the conclusion that these associations, having lived under the protection of the arbitration system for such a long time, have developed into formal but effective organizations for presenting arguments through their lawyers to the tribunals and assisting their constituents in applying the awards of tribunals. These associations are to their respective industries what industrial officers are to their firms. They have neither the experience nor the personnel to undertake collective bargaining. They are not, like their British and American counterparts,¹⁹ the basis of collective bargaining procedures, organized to face unions, to discuss possible terms with them on behalf of their constituent employers, to come to an agreement which is binding on their members, or if they are unable to do so, to act as fighting bodies if necessary, and face the consequences of a strike or lockout. There is no doubt that, deprived of readily available compulsory arbitration, employers' associations will respond to the needs of their constituents and become the basis for negotiations with unions. But so long as the present system is operating, inertia, if nothing else, will dictate that the necessary pressure will be put on political parties to prevent any fundamental change in industrial regulation.²⁰

On the argument that employers are ill-equipped to meet the unions in bargaining, it might be imagined that the unions, having gained numerical strength amongst the highest in the world, might be anxious to see the end of compulsory arbitration. It was suggested earlier that the unions have indeed been showing increasing interest in "working outside the arbitration system". All this amounts to is an attempt by negotiation with individual employers to obtain wages in

19. H. A. Clegg in A. Flanders and H. A. Clegg, *op. cit.* Chapter IV; Clark Kerr and L. H. Fisher, "Multiple-Employer Bargaining: The San Francisco Experience", in R. A. Lester and J. Shister, *Insights into Labor Issues* (Macmillan, New York, 1948).

20. The Editorial in the *Employers' Review* (October 7, 1957) emphasizes that "Industrial arbitration *must* be retained, even though more and more industrial matters may be resolved, in future, by the process of conciliation".

excess of awards wherever possible. But this does not mean that they would like to see the abandonment of the basic features of compulsory arbitration, especially if the penalty powers of the present system could be reduced. The 1955 Congress of the A.C.T.U. endorsed the recommendation of the Arbitration Committee which stated, "It is not suggested by the Committee that we should abandon the Arbitration form of adjusting industrial disputes, but that there should be radical changes in the machinery to settle either actual or potential disputes".²¹ There is no reason to suppose that the trade union movement would be prepared to apply political pressure for the elimination of compulsory arbitration.²²

At first sight, this is a little surprising in view of the numerical strength of unionists under conditions of high employment. Whatever assistance the system of compulsory arbitration might have been in the past, surely the unions should now be able to stand on their own feet and, indeed, to demand freedom to meet employers without the interference of arbitrators?

Two points may be advanced in answer. First, the inexperience and lack of confidence of union leaders to meet employers (or employers' associations) in collective bargaining. Like the employers, union leaders have been conditioned to the lighter load of responsibility and sense of security of the system of compulsory arbitration. It is usually easier to make extravagant claims than to negotiate an agreement; to criticize the award of the arbitrator than to justify the terms of an agreement; to leave the problem of enforcement to the tribunals than to accept the responsibility for it. It would require a whole succession of adverse awards for the unions to be jolted out of their traditional support for compulsory arbitration. The sort of ideal arrangement which unions envisage is to have the arbitration system operating with greatly reduced penal powers (against the unions anyway) and possibly also with less control over internal union affairs. The right to strike would exist as a means of protest, not so much against employers, but rather against the awards of tribunals or to draw attention to grievances being left unattended by tribunals.

Second, a number of significant elements—the basic wage, the general level of margins, standard hours of work—tend by their very nature to be determined at a national level. They are of fairly general application, and national economic and social considerations are relevant in their determination. It has become a feature of arbitration hearings in these matters for the A.C.T.U. to plan and to present the

21. *Executive Report*, A.C.T.U., September 5, 1955, p. 25.

22. The communist-led unions, such as the Waterside Workers' Federation, might be the few exceptions. It is possible that one of the main motives here is greater freedom for disruptive industrial warfare rather than industrial co-operation. But this should not in itself justify the general use of compulsory arbitration. As has been suggested, a persistent refusal by one or both parties to use collective bargaining as an accommodation process and a means of resolving industrial conflict, will necessitate government intervention. Those who use collective bargaining as a means of industrial warfare with reckless disregard for the public interest will, of course, call forth the limiting force of legal restraint.

union point of view; and for the Associated Chambers of Manufacturers in conjunction with a few other major federal employers' associations²³ to argue the case of the employers. The role of each of these parties is a fairly simple one: to oppose what the other proposes, through their respective lawyers. The position would be very different under collective bargaining. The parties would have to *negotiate* with each other. Each would not only speak on behalf of its constituents. It would also need effective powers to direct and discipline them, to ensure that its coercive powers were properly harnessed and that any agreement reached was honoured by all.²⁴ Trade union solidarity on such a scale is highly unlikely without far-reaching changes in the structure of unionism. It is even more unlikely on the side of employers.

Therefore, the abandonment of compulsory arbitration may well involve the abandonment of the basic wage, standard hours of work and other industrial matters which have hitherto been determined on a national basis and have imparted the high degree of uniformity in Australian industrial awards. The most that can be expected from unions and employers' associations following the abandonment of compulsory arbitration is that their organizations would be adapted for piece-meal collective bargaining along British-lines with certain industries developing leadership in wage adjustments. But the basic idea and national uniformities in wage rates, hours of work, etc., are deeply ingrained in the trade union movement and for that matter, also among employers. It is unlikely that wage earners as a whole would have anything to lose from the formal abandonment of the basic wage in a strongly unionized economy under conditions of high employment. On the contrary, to impose on wage tribunals, whose *raison d'être* is the settlement of industrial disputes, the task of formulating a centralized wage policy involves an inevitable degree of caution and conservatism in wage policy which, in the long run, may slow down the general rise in real wages. It may well be, however, that uniformity and the security of a floor to wages provided by the arbitration system rather than the maximization of the wage bill are the more urgent objectives of the trade union movement. For the present it may be more expedient to obtain over-award benefits by negotiation, wherever possible; but this is to be subsidiary to the basic feature of the compulsory arbitration system whereby tribunals may readily intervene in disputes to impose legally binding awards on the parties.

V

The prospects for collective bargaining on a wide scale in Australia are still remote. This does not mean that we have found in compulsory arbitration the ideal method of settling industrial disputes.

23. Australian Council of Employers' Federation, Australian Metal Industries' Association and Graziers' Federal Council of Australia.

24. The Scandinavian countries provide an example of the institutional arrangements necessary for collective bargaining on national issues. See Walter Galenson, *Comparative Labor Movements* (Prentice-Hall, New York, 1952), Chapter 2.

Whatever its virtues in the early years of unionism, it has certain undesirable consequences which are avoided under collective bargaining. But these weaknesses of the present system are pushed into the background by a public mind unduly morbid about strikes and untutored in the less tangible and more subtle aspects of industrial relations; by unions and employers' associations conditioned to the limited organizational needs of compulsory arbitration and thus incapable and unwilling to face a major change; and by a strong attachment on both sides of industry for a high degree of uniformity in industrial awards.

An extension of the limited practice of "working outside the arbitration system" may well be the gradual process of educating both unions and employers to the merits of collective bargaining and equipping them with the facilities for undertaking collective bargaining; and eventually exercising the necessary political pressures for the abandonment of compulsory arbitration. At the present time, the unions, dissatisfied with arbitration awards, are searching for ways and means of securing better conditions through the direct, but essentially subsidiary, process of negotiation. They would do well, however, not to be discouraged by the rebuffs from employers' associations for negotiation on *national* industrial issues, but rather to direct their efforts to negotiate at company and industry levels. The problems of adequate employer organization for collective bargaining on a nationwide basis are for the present considerable. Furthermore, as Australian industry grows in size and complexity, the case for uniformity in industrial awards becomes harder to sustain.

So long as the present provisions for compulsory arbitration remain, however, the unions' search for an alternative system will be in vain without assistance from employers. This assistance will come from those enlightened enough to realize that the cost of labour must not be measured by the wage level alone; and that only collective bargaining provides the basis for an exchange of a higher wage level for a greater measure of union co-operation.²⁵

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25. It should be understood that whatever has been said against the present provisions of compulsory arbitration does not apply to the regulations of the internal affairs of unions as provided under the Arbitration Acts. These regulations raise an independent set of problems.

NEW ASPECTS OF AUSTRALIA'S INDUSTRIAL STRUCTURE*

The aspects of the industrial structure investigated in this paper are exemplified by the following varied questions in answer to which statistical estimates have been computed: What is the import content of the investment programme? What is the contribution of manufacturing industry to exports? How far does the demand for steel depend upon demand for rural products? What would be the effect on wages and employment of a fall in investment?

The underlying object of this paper is to illustrate the uses of the accompanying 40 x 40 transactions table for 1953-4. Large tables, such as that published in the December 1957 issue of the *Economic Record*, are too cumbersome for speedy day-to-day use. Forty sector tables, however, are quite manageable in application to a variety of problems. Sections 2 and 3 set out the results of a number of calculations made with this forty sector table or—to achieve greater speed—with an aggregated twenty sector table.¹

1. Description of the tables

The transactions table is best regarded as a disaggregation of the social accounts in the *National Income and Expenditure* white paper. Table I is a tabular presentation of the double entry accounts of 40 sectors, each column showing the costs of an industry and each row the market for the industry's products. To assist the reader in reading the central rectangle, we have there shown the costs in each column not as absolute figures, but as percentages of the industry's total net cost at the bottom of the column.² Outside the central rectangle, the normal practice has been followed of showing figures in £m., except that labour is in thousand man-years.

Table II has been obtained from Table I by matrix inversion on a high-speed computer. This table shows, in each column, the *total* supplies directly *and* indirectly required from every industry to satisfy £1m. of final demand for the product of the industry named at the top of the column. The relation between these two tables may be clarified by an example. Consider the entry at the intersection of Column 4 and Row 9 in both tables. In Table I this entry shows that £1m. of manufactured foodstuffs has an average on-site black coal content of £0·004728m. However, £1m. of foodstuffs requires a variety of other

* The compilation of tables and computation of results in this paper have been done by Margaret Charlesworth, D. P. Evans and Laura Hodan. We have been assisted by a large number of public and private organizations. In particular, the work could not have been completed but for the advice and assistance generously given by the Department of Trade and by the Commonwealth Bureau of Census and Statistics.

1. The December 1957 table was published in physical units wherever possible, whereas Table I is wholly in value terms. The two tables are thus used to answer rather different questions. For other differences see Mathematical Note.

2. The transactions table has been compiled at purchaser's values. The term "net" refers to the netting out of internal sales within the industry. Refer *Economic Record*, December 1957, p. 358.

commodity inputs (as shown by the other entries in Column 4) and these commodities in turn use, directly or indirectly, black coal for their production. Hence £1m. of final demand for manufactured foodstuffs will have an average on-site and off-site coal content greater than £0.004728m. The figure is given in Table II, viz. £0.01587m.—the difference being the indirect or off-site coal content. In summary, a comparison of the two tables throws light on the structure of industry because it shows the indirect relations which exist between the sectors.

2. *Statistics on factor content and market structure*

Tables I and II can be used to obtain new statistical series which describe certain characteristics of the economy.

First, Tables I and II can furnish an answer to the question: What was the wage content of £1m. of final demand for any commodity? In Table II, Column 4 shows the supplies required from each sector to satisfy £1m. of final demand for foodstuffs. By applying in turn to the figures in this column the wage coefficients from the wages row in Table I, we obtain the direct and indirect wage content of £1m. demand for foodstuffs. The results of this and similar calculations are summarized in Table III which estimates the wage content of £1m. foodstuffs to be £0.3969m.

Similarly one may ask: What was the non-wage income content, the tax content or the import content of £1m. final demand for any commodity? The answer is obtained by a similar procedure and Table III for example shows the direct and indirect import content of unit final demand. The total import content of £1m. foodstuffs is estimated at £0.1107m. It is interesting to note that, with several important exceptions, indirect import content (difference between columns *c* and *d*) tends to be within the region of 3 per cent to 8 per cent—in part reflecting the ubiquitous usage of imported fuels and machinery, and to a lesser extent of imported chemicals and textiles.

These questions lead inevitably to others of the type: What was the wage content of the investment programme in 1953-4? What was the import content of the investment programme, of the export bill of goods? Answers to these questions can be obtained by using Table III in conjunction with the appropriate final demand column on the right-hand side of Table I.³ Table IV shows answers to such questions com-

3. This apparently straightforward procedure involves the implicit assumption that all components of aggregate final demand for the *same* commodity have the same factor content. Though we normally will make this assumption, it need not be correct and may lead to serious error. For example, it is not reasonable to suppose that the import content of home demand and export demand for "textiles" are the same. To summarize the difficulty: the attempt to specify factor content of the *individual components* of aggregate final demand for a commodity involves us in an aggregation problem.

There is one case in our computations in which we have consistently departed from the assumption that all components of aggregate final demand for a commodity have the same factor content: Following international trade theory we assume that exports of a commodity have zero direct content of competing imports. (Imports and exports are measured net of re-exports.) This involves the consequential assumption that direct import content of other categories of final demand for the commodity are above the average for that commodity.

TABLE III

*Wage Content and Import Content of £1m. of final product of industry listed in first column 1953-4**

| Industry (short title) | Wage Content £m. | | Import Content £m. | |
|--|------------------|-------------------------|--------------------|-------------------------|
| | Total | Direct (See Table I) | Total | Direct (See Table I) |
| | <i>a</i> | <i>b</i> | <i>c</i> | <i>d</i> |
| 1. Sheep | 0.2306 | 0.0867 | 0.0479 | 0.0034 |
| 2. Other rural | 0.2684 | 0.0915 | 0.0891 | 0.043 |
| 3. Beer, tobacco | 0.2368 | 0.0352 | 0.053 | 0.0222 |
| 4. Foodstuffs | 0.3969 | 0.1149 | 0.1107 | 0.0379 |
| 5. Woodworking | 0.4491 | 0.2449 | 0.143 | 0.0917 |
| 6. Paper, printing | 0.3896 | 0.2671 | 0.2671 | 0.2377 |
| 7. Chemicals, etc. | 0.3541 | 0.1382 | 0.27 | 0.211 |
| 8. Textiles, etc. | 0.3797 | 0.1761 | 0.2372 | 0.2 |
| 9. Black coal | 0.621 | 0.3132 | 0.0544 | 0.0003 |
| 10. Brown coal | 0.5515 | 0.2654 | 0.0478 | 0 |
| 11. Other mining | 0.4399 | 0.2483 | 0.2088 | 0.1367 |
| 12. Non-ferrous rolling, etc. | 0.4086 | 0.1024 | 0.2762 | 0.1522 |
| 13. Non-ferrous founding | 0.5513 | 0.3243 | 0.1085 | 0 |
| 14. Oil refining | 0.2051 | 0.0069 | 0.4314 | 0.411 |
| 15. Coke | 0.6225 | 0.1015 | 0.0658 | 0.0083 |
| 16. Electricity | 0.4631 | 0.1092 | 0.0709 | 0 |
| 17. Gas | 0.5571 | 0.1239 | 0.0723 | 0 |
| 18. Briquettes | 0.5724 | 0.2446 | 0.0344 | 0 |
| 19. Iron and steel | 0.44 | 0.2111 | 0.2777 | 0.2141 |
| 20. Radio, electrical | 0.4424 | 0.2776 | 0.2562 | 0.1912 |
| 21. Motor vehicle assembly | 0.3185 | 0.0598 | 0.3 | 0.0726 |
| 22. Motor vehicle parts .. | 0.2965 | 0.1697 | 0.4655 | 0.4259 |
| 23. Motor vehicle repairs .. | 0.5397 | 0.3793 | 0.2004 | 0 |
| 24. Ferrous castings | 0.5038 | 0.2191 | 0.1991 | 0.0186 |
| 25. Rolling stock | 0.6286 | 0.5261 | 0.2184 | 0.1746 |
| 26. Ships, boats | 0.6816 | 0.527 | 0.1471 | 0.0784 |
| 27. Agricultural machines, etc. | 0.342 | 0.1495 | 0.4399 | 0.3729 |
| 28. Sheet metal products .. | 0.4944 | 0.1998 | 0.1408 | 0.0099 |
| 29. Pipes | 0.4822 | 0.1898 | 0.2477 | 0.1109 |
| 30. Wire | 0.5043 | 0.242 | 0.1766 | 0.0766 |
| 31. Stoves, ovens | 0.5035 | 0.2468 | 0.1538 | 0.0866 |
| 32. Refrigerators | 0.2923 | 0.0682 | 0.0815 | 0.0239 |
| 33. Engineering | 0.4199 | 0.2292 | 0.3445 | 0.2901 |
| 34. Building, etc. | 0.5423 | 0.3418 | 0.1032 | 0.0215 |
| 35. Rail transport | 0.8216 | 0.7131 | 0.0329 | 0 |
| 36. Road transport | 0.523 | 0.4273 | 0.0928 | 0 |
| 37. Airways | 0.5574 | 0.4388 | 0.1741 | 0 |
| 38. Shipping | 0.6707 | 0.5671 | 0.0355 | 0 |
| 39. Commerce | 0.4446 | 0.3717 | 0.0341 | 0 |
| 40. Other services | 0.4137 | 0.2109 | 0.1621 | 0.0532 |

* Some of the figures merit comment :

The large difference between 15*a* and *b* is due to the high value of 9*a*, 35*a* and 38*a*. The large difference between 16*a* and *b* is due to the high value of 9*a* and to the relative importance of 39*a*.

The large differences between 12*c* and *d* and between 13*c* and *d* are due to the high value of 11*c*. The large differences between 21*c* and *d* and between 23*c* and *d* are due to the high value of 22*c*. The large differences between 28*c* and *d*, 29*c* and *d* and between 30*c* and *d* are due to the high value of 19*c*. The large difference between 37*c* and *d* is due to the high value of 14*c*.

The sum of columns *a* and *c* for a commodity usually accounts for at least 60 per cent of total value. In some cases the sum is below this because of high taxes (e.g. 3) or land rents (e.g. 1) or the relative importance of working proprietors (e.g. 39).

puted from a 20 sector table for 1953-4. The import content of demand is estimated at 6 per cent for exports, 16 per cent for consumption and 20 per cent for fixed investment. One reason why the consumption figure is comparatively high is that a significant amount of tools and other equipment is charged to current (and not capital) account by producers. The wage-plus-import content of consumption (52 per cent) is significantly less than that of investment (68 per cent) mainly because of high rural land rent content of foods, high excise and to some extent because of higher margins on consumer goods.

Yet another question is: What was the G.N.P. contribution of *individual* industries to exports (or to investment or consumption) in 1953-4? The answer to this is obtained in the process of drawing up Table IV. Thus Table V shows the G.N.P. contribution to exports by industries in rather broad groupings intended to contrast the "traditional" export sectors with other industries.⁴

TABLE IV
Wage and Import Content of Final Demand 1953-4: £m.

| | Value | Wage Content | Import Content |
|---|-------|--------------|----------------|
| EXPORTS net of re-exports | 898 | 304 | 53 |
| FIXED CAPITAL INVESTMENT, public and private | 1,137 | 552 | 224 |
| PERSONAL CONSUMPTION (including financial) | 2,772 | 997 | 455 |
| OTHER DEMAND (current govern- ment, stocks) | 511 | 380 | 61 |
| <i>Total Market Expenditure</i> | 5,318 | 2,233 | 793 |

Note: Consumption of imports of tourism and other transport—respectively £17m. and £11m. in official statistics—are not shown in the transactions table. Hence total market expenditure is estimated at £5,346m. on official definitions. The comparable official estimate is rather higher at £5,393m.

TABLE V
Contribution, in terms of Gross National Product, of industrial groups to the Export Bill of Goods in 1953-4

| Industry | Exports | G.N.P. Contribution |
|---------------------------|---------|---------------------|
| | £m. | £m. |
| Sheep, textiles | 437 | 296 |
| Other rural, food | 264 | 154 |
| Power, fuels | 3 | 15 |
| Other mining | 65 | 44 |
| Engineering | 31 | 41 |
| Transport, commerce | — | 188 |
| Other industry | 98 | 107 |
| Import content | — | 53 |
| | 898 | 898 |

4. The calculations were made on a 20 sector basis to reduce computing time. The comments in the previous footnote apply here.

Finally, how great are the differences in factor content of different commodity groups? The answer to this should throw some light on price formation since, with unchanging technology, the possibility of changes in relative prices depends largely on differences in factor content. Table VI shows the results of a calculation designed to answer this question. The table shows, for example, that of £1m. of manufactured foodstuffs entering into final demand, 48 per cent was labour cost and 8 per cent rural land rent—although on-site labour cost was only 12 per cent and on-site rural land rent was zero.⁵

Turning now to the structure of commodity markets, Table I shows how commodities such as black coal, petroleum products and steel are sold largely to other industries which in turn sell their products directly or indirectly to final purchasers. Thus the prosperity of the black coal industry is intimately dependent upon consumer demand for power, passenger transport and foodstuffs. What does this "final market" for black coal look like? That is, how far does total production of black coal depend upon the various specific categories of final demand? The answer to this and similar questions can be calculated rapidly by multiplying the figures in the aggregate final demand column of Table I serially by the figures in the coal row of Table II. The results of this calculation for black coal and steel are shown in Table VII. These results can in turn be broken down as between export, investment and consumption demand by using these final demand columns in Table I.

The calculations presented above represent an attempt to obtain new facts about the economy by disaggregating the social accounts. These calculations suffer from an inherent defect—that they can never be disaggregated far enough for us to be sure that the conditions of aggregation are satisfied.⁶ For example, the iron and steel "industry" produces and imports heterogeneous products. If in fact wire is made solely from Australian iron, but sheet metal products are made partly from imported sheet, then—because our classification aggregates all iron and steel products (and competing imports) up to the stage of bars, rods, rails, structurals and all plates and sheet—it follows that our estimate of the import content of wire is too high and of sheet products is too low. We can, however, hope to mitigate the aggregation

5. In this calculation, labour income includes an imputed return to working proprietors. Collection of basic data presented severe problems. In rural and mining industries, residual factor income was wholly attributed to rent, leaving zero margin. Capital charges in the rural and services sector are very tentative.

The calculation for each commodity (e.g. commodity 1) in turn was as follows. Taking the first column in the 20 x 20 inverse: multiply the first entry by *each* of the factor coefficients for industry 1 and enter in the first row of a new table having as many columns as factors; multiply the second entry by each of the factor coefficients for industry 2 and enter in the second row of the new table. The new table has 20 rows, the column sums are the required statistics for commodity 1 and the sum of column sums is unity.

6. Refer O. Morgenstern (ed.), *Economic Activity Analysis*, Wiley, 1954; also H. B. Chenery et al., *The Structure and Growth of the Italian Economy*, M.S.A., 1953.

TABLE VI

The Average Factor Content of Supplies of 20 Commodity Groups, 1953-4 (percentages)

The first row for each commodity shows (direct plus indirect) factor content summing to 100 per cent save for rounding. The second row "d" shows only direct on on-site content; the difference between the rows giving indirect factor content via embodied materials, power, services.

| Commodities Classed by Producing Industry | Labour Income | Timber Rent | Mining Rent | Rural Land Rent | Depreciation | Interest, Fixed Cap. | Margin | Indirect Tax, Net | Imports, c.i.f. |
|--|---------------|-------------|-------------|-----------------|--------------|----------------------|--------|-------------------|-----------------|
| 1. Sheep | 35 | — | — | 38 | 5 | 6 | 6 | 5 | 5 |
| d | 18 | — | — | 38 | 4 | 4 | — | 3 | — |
| 2. Other rural .. | 41 | — | — | 25 | 9 | 5 | 7 | 3 | 9 |
| d | 21 | — | — | 24 | 8 | 3 | — | — | 4 |
| 3. Beer, tobacco .. | 29 | — | — | 3 | 2 | 3 | 13 | 44 | 5 |
| d | 4 | — | — | — | — | — | 3 | 42 | 2 |
| 4. Foodstuffs .. | 48 | — | — | 8 | 5 | 5 | 16 | 6 | 12 |
| d | 12 | — | — | — | 1 | 1 | 6 | 3 | 4 |
| 5. Woodworking .. | 52 | — | — | 4 | 4 | 4 | 14 | 7 | 14 |
| d | 27 | — | — | — | 1 | 1 | 6 | 5 | 9 |
| 6. Paper, printing .. | 42 | — | — | 1 | 3 | 4 | 17 | 6 | 27 |
| d | 27 | — | — | — | 2 | 2 | 12 | 4 | 24 |
| 7. Chemicals, miscell. .. | 40 | — | 1 | 2 | 4 | 4 | 14 | 9 | 27 |
| d | 14 | — | — | — | 2 | 1 | 6 | 6 | 21 |
| 8. Textiles, clothing .. | 44 | — | — | 6 | 3 | 4 | 14 | 6 | 24 |
| d | 18 | — | — | — | 1 | 1 | 4 | 3 | 20 |
| 9. Coal | 63 | — | 14 | — | 4 | 6 | 3 | 5 | 6 |
| d | 31 | — | 13 | — | 2 | 2 | — | 2 | — |
| 10. O'r mining, refining .. | 47 | — | 12 | 1 | 4 | 4 | 8 | 4 | 21 |
| d | 27 | — | 12 | — | 2 | 2 | 4 | 2 | 15 |
| 11. Oil refining .. | 24 | — | — | — | 2 | 3 | 12 | 16 | 43 |
| d | 1 | — | — | — | — | — | 3 | 15 | 41 |
| 12. Gas, electricity .. | 53 | — | 5 | 1 | 7 | 11 | 12 | 5 | 7 |
| d | 12 | — | — | — | 4 | 7 | 3 | 1 | — |
| 13. Iron and steel .. | 45 | — | 2 | — | 4 | 5 | 11 | 5 | 28 |
| d | 21 | — | — | — | 2 | 2 | 7 | — | 21 |
| 14. Radio, electrical .. | 47 | — | 1 | 1 | 3 | 3 | 11 | 9 | 25 |
| d | 28 | — | — | — | 1 | 1 | 5 | 7 | 19 |
| 15. Motor vehicles .. | 42 | — | — | — | 2 | 3 | 10 | 14 | 28 |
| d | 23 | — | — | — | 1 | 1 | 3 | 12 | 24 |
| 16. O'r engineering .. | 47 | — | 1 | — | 2 | 4 | 11 | 6 | 28 |
| d | 26 | — | — | — | 1 | 1 | 4 | 4 | 22 |
| 17. Building .. | 64 | — | 1 | 1 | 2 | 2 | 15 | 4 | 10 |
| d | 41 | — | — | — | — | — | 9 | 2 | 2 |
| 18. Transport .. | 73 | — | 1 | — | 4 | 9 | 2 | 5 | 7 |
| d | 62 | — | — | — | 3 | 8 | —1 | 3 | — |
| 19. Commerce .. | 55 | — | — | — | 3 | 6 | 29 | 4 | 3 |
| d | 46 | — | — | — | 2 | 5 | 27 | 2 | — |
| 20. Other services .. | 50 | — | — | 3 | 5 | 6 | 12 | 6 | 17 |
| d | 26 | — | — | — | 3 | 4 | 6 | 3 | 5 |

Note: Any figure below 0.5 per cent is not entered.

TABLE VII
The Final Market for Coal, etc., 1953-4: £m.

| Final demand for commodities classified by producing industry | Black Coal | Petroleum Products | Iron and Steel |
|---|------------|--------------------|----------------|
| 1. Sheep | 2 | 12 | 2 |
| 2. Other rural | 3 | 22 | 5 |
| 3. Beer, tobacco | 2 | 5 | 1 |
| 4. Foodstuffs | 9 | 19 | 8 |
| 5. Woodworking | 0 | 2 | 0 |
| 6. Paper, printing | 1 | 1 | 0 |
| 7. Chemicals, etc. | 3 | 5 | 1 |
| 8. Textiles, clothing | 3 | 9 | 1 |
| 9. Coal | 3 | 0 | 0 |
| 10. Other mining | 1 | 1 | 1 |
| 11. Oil refining | 0 | 72 | 0 |
| 12. Gas, electricity | 22 | 4 | 0 |
| 13. Iron and steel | 1 | 0 | 8 |
| 14. Radio, electrical | 1 | 2 | 1 |
| 15. Motor vehicles | 2 | 4 | 7 |
| 16. Other engineering | 7 | 8 | 31 |
| 17. Building | 12 | 12 | 17 |
| 18. Transport | 3 | 14 | 0 |
| 19. Commerce | 0 | 0 | 0 |
| 20. Other services | 6 | 39 | 5 |
| Total sales (see Table I) .. | 80 | 230 | 90 |

Notes: The results of the calculations, carried out on a 40 industry basis, have been grouped for compact presentation. Figures are rounded and therefore may not sum to the total.

The table shows, *inter alia*, the extent to which sales of the products of the mineral oils industry depend upon the various categories of final demand. For example, sales by this industry depended to a significant extent (£19m.) upon final demand for manufactured foods.

In the last column the large sub-total £31m. contains (in terms of the 40 sector classification) two large items: (27) tractors and agricultural machinery £9m.; (33) engineering £13m. That is, the final demand for agricultural machinery accounts for 10 per cent of sales of iron and steel. Since the final demand for all rural products and foodstuffs (the first four groups above) accounts for a further £16m. of steel sales, the relation between the rural and steel industries is of major importance.

problem by care in choice of classification and in interpretation of results.⁷

3. *Input-output analysis and technology*

Studies of factor content and market structure are an attempt to describe certain characteristics of the economy in terms of arithmetic averages. Their aim is to describe a given situation, not to analyse the nature of possible change in the situation. Because of this, such studies do not need to make any assumption regarding the structural relations of the economy, but can proceed solely on the basis of a set of accounting identities. Input-output analysis, however, is concerned to discuss change, and the attempt to do this immediately involves us in the

7. Much work remains to be done on the aggregation problem. Comparison of results obtained from the 40 sector and 20 sector inverses shows that results may vary significantly with the degree of aggregation.

nature of structural relations, most notably in the nature of technology. It seems desirable to set out something of our approach to this because our view of technology must condition all attempts at input-output analysis.

Studies of Australian industries show that they are usually characterized by a rising trend in output⁸ and (though not always) by technical progress. Because our studies of materials and services input coefficients show many of them to be comparatively steady and few of them to have any clear trend, the main impact of this technical progress in input-output models is held to be through falling labour input coefficients. This generalization is of course modified by the appearance of new materials, by the development of new methods of producing old materials (both of which give rise to substitution) and especially by input substitution among fuels, packaging materials and transport service inputs. Nonetheless, it is clear that the method of treating labour coefficients in input-output analysis merits special appraisal.

Study of official series suggests that the characteristic relationship between employment and output in Australian manufacturing industry is as follows (refer Figure 1) :

- (i) NA is the expansion path showing the long-run historical relation of labour to output. All expansion is along this path which incorporates the effects of innovation, overheads and external economies. (With available Australian statistics it also reflects changing overtime and changes in the length of the standard working week.)⁹
- (ii) XY is the short-term contraction path. The angle of the line is comparatively flat *both* because some labour is a genuine overhead in plant operations and because in an industry which plans in terms of long-run expansion some short-term disguised unemployment is tolerated in order to hold skilled crews together.
- (iii) Long-run contraction, should it occur, would be along the ray XN which does not include any short-term disguised unemployment. The intercept ON measures genuine labour overheads which are independent of sales expectations.¹⁰

The implications of Figure 1 for input-output analysis differ according to the application in mind. Thus for an input-output study of the long-term effects of immigration, it is the expansion path which is of concern. For a study of the effects of a contraction in investment demand, it is the path XY or XN which is relevant.

8. It is of course common for such industries to experience occasional temporary falls in output, notwithstanding the secular trend.

9. The expansion path need not be positively inclined.

10. A fourth relation may become relevant if plant size is small relatively to the change in demand for industry's output. For then a fall in demand may result in shutting down a plant, so that overheads within that plant become variable inputs for the industry. Contraction of output is then along a ray through the origin O.

However, although we may believe that Figure 1 portrays the characteristic relations between employment and output, it is difficult to translate this approach into actual statistics. So long as there is technical change, it is in general impossible to specify the parameters of any production function from time series data—for these series may

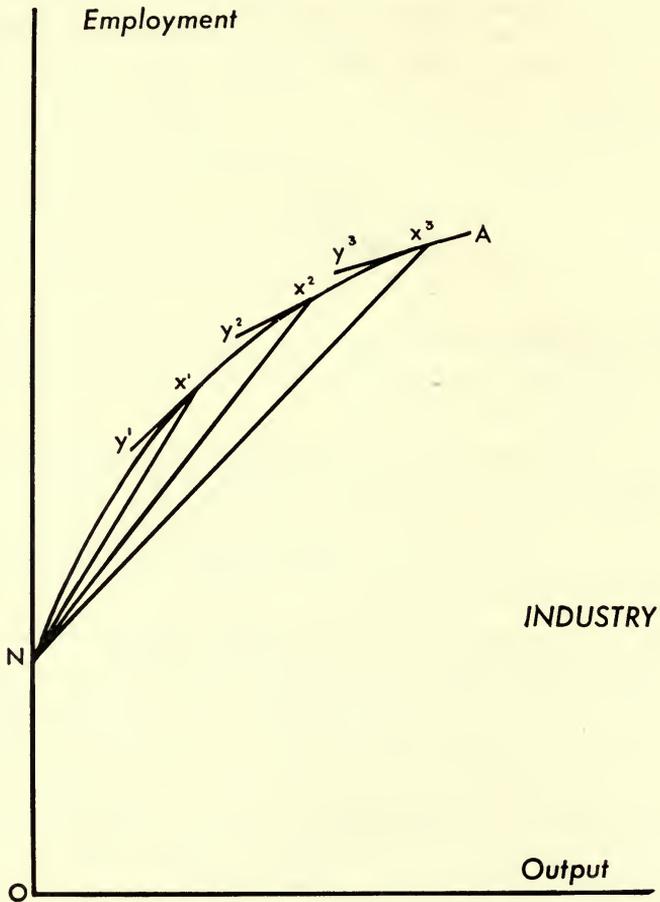


FIG. 1.

consist of one reading only from each of a number of functions. For example, the attempt to relate the observations X^1 , X^2 and X^3 by a straight line of best fit would give a wholly misleading picture of technology in year 3. Technical progress in an expanding industry generates an *apparent* fixed element in the labour input, evidenced by the positive intercept on the vertical axis of the line of best fit—the reader may draw this through X^1 , X^2 and X^3 —which is greater than the true intercept ON . Moreover, the slope of this line of best fit is

determined to a major extent by the elasticity of demand for the commodity and not by the characteristics of technology.¹¹

It is clear that the possibility of using Tables I and II in an input-output analysis of, say, the effects of falling investment depend upon our ability to specify the slopes of XY or of XN for each industry.¹² The obstacles to obtaining this information are three. First, although the slope of XY can be estimated in isolated cases (see Table VIII for examples), there is no possibility of obtaining such recent information for all industries because many have not had significant falls in output for a decade or longer. Second, the attempt to estimate the slope of XN

TABLE VIII
*Labour-Output Relations in Recession:
Some manufacturing industries*

| Industry | Year | Labour/ output ratio | Marginal labour coefficient in next year's output fall |
|---|---------|----------------------------|--|
| Flourmilling men/m. ton | 1952-53 | 0.00481 | 0.00228 |
| Ice cream men/'000 gal. | 1951-52 | 0.0000872 | 0.0000237 |
| Sawmills men/m.sup. ft. | 1951-52 | 0.0000198 | 0.0000173 |
| Tanning men/m. sq. ft. | 1950-51 | 0.000057 | 0.0000408 |
| Briquetting men/m. ton | 1949-50 | 0.00071 | 0.000013 |
| Brickworks men/mil. | 1951-52 | 0.0000131 | 0.0000046 |
| Cotton mills men/m. lb. | 1951-52 | 0.000257 | 0.00017 |
| Woollen mills men/m. sq. yd. | 1950-51 | 0.000642 | 0.00035 |

is dogged by the fact that technical change generates apparent overheads. Third, many industries present serious difficulty in obtaining an index of output. These last two difficulties in estimating the slope of XN are so serious that the attempt would have been abandoned but for the importance of having some notion of the magnitude of this built-in stability of the economy implied in the existence of overheads. Accordingly labour-output charts of some 150 industries were scrutinized and conservative estimates made of labour overheads in 1953-4

11. This comment on the slope of the line of best fit may be emphasized by pointing out that the slope of the expansion path (and, roughly, of the line of best fit) is only positive if the rate of expansion of output is greater than the rate of productivity increase, and there is no reason why this should be so.

12. Such input-output analysis is also premised upon the assumption of constant commodity input coefficients and constant import coefficients. Study of the time series suggests that these are, in general, reasonable assumptions as a first approximation to the analysis of short-run change.

These assumptions also imply that we can use the results in Table III (column c) as showing the effect of a *change* in unit final demand upon total imports. For example, a £1m. fall in demand for vehicles is estimated to cause a fall in imports of £0.3m. in 1953-4.

TABLE IX
Labour Overheads, 1953-4

| Industry | Overheads (employment) '000 persons | Marginal wage coefficient |
|--|---|---------------------------------|
| 1. Sheep | 179·006 | 0 |
| 2. Other rural | 317·604 | 0 |
| 3. Beer, tobacco | 2·4 | 0·029256 |
| 4. Foodstuffs | 14·75 | 0·104797 |
| 5. Woodworking | 9·4 | 0·236488 |
| 6. Paper, printing | 9·3 | 0·228992 |
| 7. Chemicals | 15·1 | 0·113417 |
| 8. Textiles | 23·5 | 0·162352 |
| 9. Black coal | 0 | 0·313186 |
| 10. Brown coal | 0 | 0·265433 |
| 11. Other mining | 0 | 0·248300 |
| 12. Non-ferrous rolling | 1·9 | 0·047526 |
| 13. Non-ferrous founding | 0 | 0·324275 |
| 14. Oil refining | 0·5 | 0·004985 |
| 15. Coke | 0 | 0·101481 |
| 16. Electricity | 9·0 | 0·023098 |
| 17. Gas | 0·5 | 0·108948 |
| 18. Briquetting | 0·1 | 0·192858 |
| 19. Iron and steel | 2·8 | 0·181625 |
| 20. Radio and electrical | 7·0 | 0·240625 |
| 21. Motor vehicles: assembly | 5·0 | 0·040344 |
| 22. " " parts | 7·0 | 0·132989 |
| 23. " " repairs | 0 | 0·397296 |
| 24. Ferrous castings | 0 | 0·219060 |
| 25. Rolling stock | 40·0 | 0·038551 |
| 26. Ships | 0 | 0·526967 |
| 27. Tractors, agricultural machinery | 3·8 | 0·103468 |
| 28. Sheet metal products | 2·5 | 0·179012 |
| 29. Pipes | 2·0 | 0·126016 |
| 30. Wire | 3·0 | 0·148928 |
| 31. Stoves | 2·9 | 0·093150 |
| 32. Refrigerators | 2·9 | 0·024057 |
| 33. Engineering | 38·1 | 0·150422 |
| 34. Building, etc. | 63·404 | 0·336073 |
| 35. Rail transport | 16·0 | 0·595655 |
| 36. Road transport | 30·773 | 0·427344 |
| 37. Airways | 3·079 | 0·357860 |
| 38. Shipping | 9·654 | 0·467100 |
| 39. Commerce | 309·751 | 0·224729 |
| 40. Other services | 209·392 | 0·139621 |

TABLE X

*Effect of £1m. Change in Investment Demand Upon National
Wage Bill: 1953-4 Constant Wage Rates*

| Product of industry | Changes in wages £m. |
|--|-------------------------|
| Radio and electrical | 0·359 |
| Motor vehicle assembly | 0·229 |
| Motor vehicle parts | 0·232 |
| Rolling stock | 0·12 |
| Tractors, agricultural machinery | 0·253 |
| Engineering | 0·293 |
| Building and construction | 0·494 |

corresponding to the intercept ON. These estimates are intentionally conservative because it is necessary to guard against the bias introduced by technical progress. The estimates are shown in the first column of Table IX while the second column shows the consequent marginal wage coefficients.¹³

The marginal wage coefficients in Table IX can be used, together with Table II, to estimate the effect on wages of a fall of £1m. in final demand for various types of investment good. Table X shows the results of such a calculation for investment goods in respect of which aggregate final demand in 1953-4 exceeded £50m.¹⁴ For example, the table shows that in 1953-4 a fall in demand for motor vehicles of £1m. could be expected to result in a fall in wages throughout all industries of £0.229m. This figure may be compared with the average wage content of £1m. from Table III, viz. £0.3185m. Table X illustrates how we may attempt to allow for the existence of labour overheads in estimating the effect of changes in final demand. In using the results of such calculations it should be remembered not only that the estimates of overheads in Table IX are rather uncertain but also that in an economy geared to expansion labour overheads may be substantially greater because of a willingness to tolerate short-term disguised unemployment.

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Mathematical Note

Competing imports are shown in this transactions table as an input into the home import-competing industry. The outflow from the industry is therefore not "output" but "total available supplies" of the commodity concerned. The relationship for Row 1 of the table then is

$$y_1 = S_1 - x_{12} - x_{13} - \dots - x_{1,40} \dots \dots \dots (I)$$

where S_1 is total supplies (output plus imports) of the commodity produced by industry 1, y_1 is final demand, x_{12} is the input of 1 into industry 2.

Let $x_{12} = a_{12}S_2$; $x_{13} = a_{13}S_3$, etc.

For the purposes of Section 2 of this paper, the above equation (I) is an *ex post* accounting identity (including given stock changes), while the coefficients a_{1j} are defined as giving the "average input content" for that level of supplies and not relevant to any other level of supplies.

13. It was assumed that all labour is an overhead in rural industry and that no labour is an overhead in mining. Labour-output charts were drawn up for individual manufacturing industries for periods varying from seven to thirty years according to the availability of reliable data. S. P. Stevens' ANZAAS paper (Section G, January 1953) was used as a source of production indices. It was assumed that labour overheads are zero in building because the data are inconclusive. In commerce, real G.N.P. was used as an index of sales volume. Since it happens that for all manufacturing the estimate of employee overheads is around 17 per cent of total employees, it seemed reasonable to suppose that employee overheads were at least of this order in railroads, airways and shipping. In other services it was assumed that all employees in financial and communications services are overheads and that there are no other employee overheads in this sector.

14. Since exports of these commodities are small relatively to aggregate final demand for them, it has been assumed for speed of calculation that all components of aggregate final demand for a commodity have the same factor content. Refer footnote 3 above.

For the purpose of Section 3 of this paper, the coefficients a_{1j} are assumed to be the average and marginal technical input coefficients, the unit of measurement being the quantity purchasable in 1953-4 for £1m. We are also necessarily involved in the assumption that purchasers either did not change their stocks of inputs or, if they did, that changes in stocks of inputs are proportional to change in output. In input-output analysis equation (I) is now to be regarded as an *ex ante* condition of equilibrium.

The forty equations (I) yield a general solution of the form

$$\left. \begin{aligned} S_1 &= A_{11}y_1 + A_{12}y_2 + A_{13}y_3 + \dots + A_{1,40}y_{40} \\ S_2 &= A_{21}y_1 + A_{22}y_2 + A_{23}y_3 + \dots + A_{2,40}y_{40} \\ \text{etc.} \end{aligned} \right\} \text{ (II)}$$

In this general solution the A_{1j} are the elements of the matrix in Table II.

The above equations may be compared with those used in the *Economic Record*, December 1957, p. 356, specifically with regard to the different treatment of internal sales, imports and the use of producer's values.

INSTITUTIONAL INVESTMENT IN LISTED COMPANY SECURITIES

It is often claimed that, in many Western European countries and in the United States institutional investors—insurance companies, pension funds, investment trusts, etc.—have, in the post-war period, come to occupy a dominant place in the new issue market. Whether or not this is so overseas, it is certainly not yet the case in Australia—at least not in the market for company securities. It is, unfortunately, impossible to make accurate estimates of the volume of funds flowing into the company new issue market through the various institutions. It is believed, however, that the estimates made below are of the right order of magnitude. If they are, then it would appear that institutional investors currently account for only about 20 per cent of the funds raised by companies through the new issue market. While it is true that this proportion is very much higher than that which obtained before the war and while it has to be remembered that institutional investors have also made available considerable amounts to companies other than through the new issue market—notably by the direct placement of preference shares and debentures and by mortgage loans—it is still the case in Australia that the bulk of the finance obtained by companies by the issue of securities is supplied by private investors.

Life Insurance Offices

The institutions with by far the greatest volume of funds currently becoming available for investment in the new issue market are the life insurance offices. Information about their aggregate lending in Australia is available in the returns published by the Commonwealth Bureau of Census and Statistics in the *Finance Bulletins*. This, in turn, is derived from statutory returns filled with the Commonwealth Life Insurance Commissioner. Unfortunately these returns were drawn up with the interest of the actuary rather than the economist in mind with the result that, while it is possible to obtain from them a reasonably accurate broad view of the flows of funds through the life offices, the returns fail to throw much light on many of the more detailed problems of the capital market. In particular, the classification of assets is such that it is impossible to gain from them accurate measures of the flow of funds into the various sectors of the capital market or even of the total flow of life assurance savings in Australia.

Some of these difficulties derive from the fact that the major Australian life offices do not confine their activities to Australia but also conduct extensive business in New Zealand, the United Kingdom and South Africa and they are not required by law to publish all details of their purely Australian business. It is this fact, for instance, which makes it difficult to derive accurate estimates of Australian savings through life assurance. Details are available of Australian receipts from premiums and annuities and of payments to Australian policy

holders, but there are no separate Australian figures available for income received from interest, dividends and rents or for various items of expenditure, namely expenses of management, taxation, dividends and "other" expenses. It is a pity that it should be necessary to make rough and ready estimates of the Australian proportion of these items in order to obtain an estimate of such an important component of national savings as life assurance savings. While it may be admitted that the life offices concerned might well find it difficult to make a precise allocation of all items of income and expenditure between their Australian and overseas business they are, presumably, in a better position to make this allocation than any outsider.

As has already been indicated it is not only the income statement which is inadequate for anyone concerned with an economic analysis of life assurance activities but also the classification of assets. In the context of this discussion it is important to know how much the life offices are lending to companies and what proportion of that amount flows through the public capital market. This information is not available from the returns in their present form. On the one hand it is well known that the life offices lend companies considerable sums on mortgage but with one omnibus item "loans on mortgage" it is impossible to tell how much. On the other hand the items "debentures", "preference shares" and "ordinary shares" consist of a mixture of amounts made available to companies partly through direct negotiation and partly through purchases on the various Australian stock exchanges. A further complication is that in the published returns the item "other loans" includes substantial sums lent to companies in the form of notes.¹ To overcome these difficulties the life offices should be required: to break down mortgages, if not according to type of borrower, then at least by nature of industry along lines comparable to those available in the classification of bank advances; to provide a separate item for notes; and to subdivide notes, debentures, preference and ordinary shares along the lines required by the Victorian Companies' Act, i.e. into "listed" and "unlisted".

While it is the case, then, that life assurance data are inadequate it is nevertheless possible to make some meaningful comments on the character of life assurance lending in the post-war period. The year 1947 has been chosen as a starting point rather than 1946, because this was the first year during which accounts were drawn up along lines required by the Commonwealth Life Insurance Act 1947. Figures for earlier years are not directly comparable with the post 1947 series. Two tables have been constructed to illustrate the developments that have occurred. The first, Table I, shows the aggregate distribution of life assurance assets held in Australia in 1947 and in 1956. The second, Table II, provides estimates, derived from balance sheet differences, of the annual flow of funds into different types of asset between those

1. Through the courtesy of the Commonwealth Statistician the amounts involved here have been deducted from other loans and transferred to "debentures and notes" in Tables I and II below.

dates. The balance sheets of the twenty odd life offices operating in Australia are drawn up at various dates but relate predominantly to 31st December.² The annual flows are then roughly for calendar years.

TABLE I
Life Assurance Assets held in Australia 1947 and 1956

| | 1947 | | 1956* | |
|---|-------|-------|-------|-------|
| | £m. | % | £m. | % |
| Fixed assets | 13.0 | 3.5 | 31.1 | 4.2 |
| Loans on mortgage | 47.1 | 13.2 | 230.7 | 31.2 |
| " " debentures and shares .. | (a) | | 1.9 | 0.3 |
| " " policies | 15.8 | 4.4 | 29.3 | 4.0 |
| Other loans | 3.6 | 1.0 | 18.9 | 2.6 |
| Australian Government securities .. | 207.2 | 58.1 | 210.8 | 28.5 |
| Securities of local and semi-govt. bodies | 49.0 | 13.7 | 115.4 | 15.6 |
| Debentures and notes | 4.2 | 1.2 | 49.3 | 6.7 |
| Preference shares | 1.6 | 0.4 | 15.2 | 2.0 |
| Ordinary shares | 4.2 | 1.2 | 19.2 | 2.6 |
| Holdings in controlled companies .. | 1.1 | 0.3 | 3.2 | 0.4 |
| Cash | 2.9 | 0.8 | 1.6 | 0.2 |
| Other assets | 7.4 | 2.1 | 12.8 | 1.7 |
| Total assets held in Australia .. | 357.1 | 100.0 | 739.5 | 100.0 |

Note: Tables may not add exactly because of rounding.

* Preliminary figures. (a) Less than £50,000.

Source: Derived from Commonwealth Bureau of Census and Statistics *Finance Bulletin*.

Table I highlights the changes that occurred in the holdings of assets held in Australia by the life offices in roughly the first post-war decade. As in other Western type economies the Australian life offices emerged from the Second World War with their investment portfolios containing disproportionately large holdings of government securities. Even apart from considerations of the yields obtainable from government securities the life offices would have been concerned in the early post-war years to return to a more diversified pattern of asset holdings.³ The low yields on government securities obtaining at this time greatly reinforced this desire. At the same time supplies of the other types of securities in which Australian life offices have been traditionally interested—those of local and semi-governmental bodies and mortgages on houses, on urban buildings and factories—became readily available. In addition the life office offices made significant investments in what was for them virtually a new field, namely company debentures, notes, preference and ordinary shares. By the end of 1956,

2. At least 65 per cent of total Australian assets was held by companies balancing on 31st September, 1956. At least another 25 per cent was held by companies balancing on 30th September, 1956.

3. For a discussion of the similar type of movement which occurred in the United Kingdom over the same period see G. Clayton & W. T. Osborn *Insurance Companies and the Capital Market. The Three Banks Review*, March 1958, pp. 21-35.

the combined effects of these trends in life office lending had resulted in an investment portfolio comparable to that which had obtained before the war. Indeed it was considerably more diversified than the inter-war one. Not only had there been large scale investment in the new types of asset, namely company securities, but also their failure to make a net addition to their holdings of Commonwealth government securities over a period when their total assets within Australia more than doubled meant that, by 1956, they were holding a smaller proportion of government securities of all types than they had held at any time since the First World War.

Before examining the annual movements in life office assets as illustrated in Table II, some comment on their accuracy is necessary. First it should be noted that as the series is derived from balance sheet differences and as there is some variation in the balancing dates⁴ the figures cannot be exact annual flows. Secondly they include a number of relatively small changes due to revaluations of assets. Finally they include changes in assets resulting from changes in the definition of "Australian" assets. These latter changes are of sufficient magnitude to need further consideration. That there is something wrong about the published annual series of Australian assets is indicated by the fluctuations in the annual increases—when one would expect, *a priori*, in these years, that there would in fact be continual increases in the life offices holding of Australian assets. These fluctuations remain in the Australian series even when allowance is made for the use of bank overdraft, which in a few of the years concerned was quite substantial. They do not occur in the movement of total Australian and overseas assets (last row of table) nor do they occur in the estimates of Australian life office savings derived from the income accounts (second last row). In fact, it turns out that the major abnormal movement in the series of assets held in Australia, in 1953, arises from a change in the definition of assets held in Australia by one of the major offices. Before 1953 it had defined assets held in Australia as assets held there on behalf of Australian policy-holders. In that year it adopted the definition, total assets held in Australia regardless of the location of the policy-holders on whose behalf the assets were held. Some £7·2m. was involved in this change in definition, of which approximately £2m. were holdings of Commonwealth Government securities and the bulk of the remainder securities of local and semi-governmental authorities. This means that the actual increase in the former item in 1953 was about £10m., and in the latter about £12m., the increase in total assets held in Australia being £43·1m.⁵

The annual changes (in Table II) that are of particular interest in the context of this discussion are those in debentures and notes, preference and ordinary shares. As has already been indicated, movements in these items do not reflect either total life office lending to companies or their purchases through the mechanism of the public capital market.

4. See n. 2 above.

5. The writer is indebted to Mr. J. Anderson of the Commonwealth Bureau of Census and Statistics for clarification of this point.

As shots in the dark it may be suggested that it is not unlikely that at least as much was lent to companies on mortgages in this period as was invested in debentures and notes and that perhaps one-half of the debentures and notes, one-half of the preference shares and virtually all the ordinary shares were acquired through the public market. If these guesses are of the right order of magnitude then it would appear that about one-third of life office net new lending in the period from 1947 to 1956 was to companies and perhaps something like one-tenth of it through the public capital market for company securities. While it is impossible to be sure without detailed work on the records of the life offices it is highly probable that lending by the life offices on this scale to companies or, even more generally, to non-farm business enterprises is unprecedented. It is certainly the case that the substantial investment through the public capital market is a new departure for them. The latter development has received some comment in the financial press, the size of the former movement seems to have gone unnoticed.

While the life offices' entry into the share market was virtually a post-war phenomenon, preparations for such an entry had been under way for the best part of a decade before then.⁶ Thus in 1937 the Australian Mutual Provident Society sent its general manager abroad to report on the activities of life offices in the United Kingdom, Canada and the United States. On the basis of his report an Amending Bill to the Society's Act of Incorporation was prepared and subsequently passed in 1941 as the "Australian Mutual Provident Society's (Amendment) Act 1941". Amongst other things this Act withdrew the restrictions placed on its investment policy by its previously operative 1910 Act of Incorporation. Supplementary alterations to the Society's own investment by-laws were made in 1943. While the war continued, however, the Society did not take advantage of its new powers and it was not until its 1946 balance sheet (31st December) that the items "preference shares" and "ordinary shares" made their appearance.⁷ Other leading life offices had been amending their investment powers at about the same time as the Australian Mutual Provident Society but, likewise, did not use their new powers until after the end of the war.

In assessing the nature and significance of life office investment in the share market some comment is necessary on the character of their investments in this field. The first point to note is that their individual investments are relatively large.⁸ Some indication that this is so is pro-

6. One of the smaller life offices, the Australian Provincial Assurance Association Ltd. made much of its investment in equities in the late 1920's but its example was not followed by the major offices so that it was of little quantitative importance. See J. McB. Grant, *Life Assurance in Australia and its Economic Consequences*. Unpublished M.Sc. Thesis, Adelaide, 1952, pp. 86-7.

7. The above details are taken from the annual chairman's address of the Australian Mutual Provident Society 1937 *et. seq.*

8. It should be noted that these remarks relate to purchases made on the public market. Individual private placements of debentures of over one million pounds and of preference shares of several hundred thousand pounds are not exceptional. Cf. the detail included in J. McB. Grant, *op. cit.* Appendices III and IV, pp. 171 *et. seq.*

vided by data in the appendix to E. C. Wheelwright's *Ownership and Control of Australian Companies*, which show average holdings of £20,000 nominal value or at least £30,000 cost price. This information is not however conclusive as it excludes holdings by life offices of less than £10,000 nominal value. It also seems probable, but once again the data are not such as to make it certain, that the bulk of life office purchases on the public market are in a limited range of companies, i.e. the large ones.⁹ In general the kind of securities in which the life offices are interested is indicated by the following statement by the chairman of the National Mutual Life Association. "Our own investments in these securities (stocks and shares) are confined to stocks of companies which have a paid-up capital of not less than £200,000, and which have paid a dividend of at least 4 per cent upon their own ordinary stocks or shares for the five consecutive years immediately preceding the date of purchase: in other words to well-established companies with good records."¹⁰

As can be seen from the relative importance of their investments in the different types of company securities, the life offices have made little attempt to hedge against inflation on a significant scale. In part this may have been due to their inability to obtain holdings of ordinary shares on the scale required to have any real effect from this point of view.¹¹ The tenor of remarks appearing in published reports in these years suggests, however, that the basic reason for the life offices' substantial investment in company securities was a desire to increase the overall yield on their investment portfolios rather than an attempt to counteract the effects of inflation. As a result of the cheap money policy adopted to finance the war and of the life offices' support of the bond market during it, over one-third of their assets must have been yielding only $3\frac{1}{4}$ per cent by 1946. This meant that their average gross interest earnings on their life funds had fallen from about 4.5 per cent in 1939 to 3.8 per cent in 1949, the lowest point of their gross earnings in the post-war period. The size of their low yielding bond holdings has

9. Wheelwright's data relate primarily to 1953. In that year the value of the life offices' holdings of Australian company ordinary shares according to their balance sheets was £14m. The separate Australian life office holdings of ordinary shares, in the 90 companies surveyed by Wheelwright in which it was possible for them to invest in ordinary shares and for which the required detailed information is available, amounted to £4.85m. nominal value or at least £7m. cost price to the life offices. When it is remembered that separate figures for the individual Australian life offices would only have been taken out by Wheelwright if their holding in a particular company was greater than £10,000 nominal value, it would appear that perhaps three-quarters of the life offices' holdings of ordinary shares was in these 90 large companies which at this date probably accounted for about half the total listed capital of Australian registered companies on the Australian Stock exchanges. See E. L. Wheelwright *Ownership and Control of Australian Companies*, Law Book Co. of Australia, Sydney, 1957, Appendix pp. 124-206 for the detailed lists of share-holdings which provide the basis for this comment.

10. Chairman's address to the National Mutual Life Association of Australia, 16th March, 1949, as reported in the *Australasian Insurance and Banking Record* 1949, p. 152.

11. Cf. "In a limited market such as exists in Australia, unrestricted buying by life offices could force up the prices of shares beyond their merits." National Mutual's Chairman's Address, *ibid.*

TABLE II
Life Assurance Assets held in Australia

Net Change from Year to Year
(£m.)

| | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956* | 1947-56 | % Distribution 1947-56 |
|--|------|------|-------|-------|------|------|------|------|--------|---------|------------------------------|
| Fixed assets | 0.1 | 0.6 | 0.2 | 0.5 | 2.0 | 1.1 | 1.3 | 4.3 | 8.0 | 18.1 | 4.7 |
| Loans on mortgage | 4.9 | 9.0 | 21.9 | 30.5 | 22.7 | 13.5 | 16.0 | 32.2 | 33.0 | 183.6 | 47.9 |
| Loans on debentures and shares | (a) | 0.1 | 1.0 | 0.3 | (a) | 0.8 | (a) | -0.1 | -0.1 | 1.9 | 0.5 |
| Loans on policies | 0.3 | 0.6 | 0.3 | 1.0 | 2.5 | 1.2 | 1.4 | 2.6 | 3.6 | 13.5 | 3.5 |
| Other loans† | 0.5 | 1.3 | 4.3 | 4.6 | 2.6 | 0.2 | -0.5 | -0.2 | 2.5 | 15.3 | 4.0 |
| Australian Government securities | 9.1 | 5.7 | -12.4 | -15.3 | 2.1 | 11.8 | 5.0 | -4.0 | 1.6 | 3.6 | 0.9 |
| Securities of local and semi-govt. authorities | 5.1 | 1.6 | 7.7 | 9.7 | 2.6 | 17.3 | 14.9 | 3.7 | 4.1 | 66.4 | 17.4 |
| Debentures and notes† | 0.7 | 1.6 | 5.8 | 6.6 | 1.3 | 3.4 | 6.3 | 12.9 | 6.5 | 45.1 | 11.8 |
| Preference shares | 2.2 | 3.6 | 3.1 | 2.3 | -0.1 | 0.6 | 0.6 | 0.7 | 0.8 | 13.6 | 3.5 |
| Ordinary shares | 2.3 | 2.5 | 1.3 | 1.1 | 2.1 | 0.6 | (a) | 1.8 | 3.2 | 15.0 | 3.9 |
| Holdings in controlled companies | 0.3 | 0.8 | 0.4 | 0.2 | 0.3 | 0.1 | (a) | 0.1 | -0.1 | 2.1 | 0.6 |
| Cash on deposit, current account and in hand | 0.4 | 1.1 | -0.8 | -0.9 | (a) | 0.1 | -0.5 | 0.6 | -1.3 | -1.3 | -0.3 |
| Other assets | 0.1 | 0.4 | 0.8 | 0.2 | 0.5 | -0.2 | 1.0 | 0.7 | 1.8 | 5.4 | 1.4 |
| Total Australian assets | 26.0 | 28.8 | 33.4 | 40.8 | 38.5 | 50.3 | 45.4 | 55.5 | 63.7 | 382.4 | 100.0 |
| Total Australian assets less increase in bank overdraft† | 25.9 | 28.7 | 32.4 | 39.0 | 38.8 | 50.4 | 45.4 | 54.1 | 64.3 | — | — |
| Estimated Life Assurance savings | 26.3 | 28.8 | 31.3 | 36.1 | 38.5 | 42.7 | 48.7 | 55.0 | (62.0) | — | — |
| Change in total Australian and over-sea assets less change in bank overdraft | 32.6 | 37.5 | 44.0 | 48.6 | 49.8 | 58.6 | 65.2 | 72.2 | 79.7 | — | — |

† These items differ from those published in the *Finance Bulletin* in that holdings of notes included in "other loans" have been transferred to debentures.

‡ The bank overdraft figures used relate to total (Australian and overseas) business and hence this series may involve some understatement of the increase in assets held in Australia.

Source: Derived from Commonwealth Bureau of Census and Statistics *Finance Bulletin*.

Note: Tables may not add up exactly because of Sundries.

(a) Less than ± £50,000.

* Preliminary figures.

also been such that, despite their movement out of bonds and the progressive increases in bond rate from $3\frac{1}{8}$ per cent in 1950 to 5 per cent in 1956-7, their average gross interest earnings had only risen sluggishly to 4.4 per cent in 1955.¹²

Partly because of the inadequate nature of the statistics and partly because Australian life business is dominated by six large offices, independent action by any one of which would be sufficient to alter the average behaviour suggested by the aggregate figures, it is difficult to generalize about life office investment policy in relation to the public capital market for company securities as is indicated in Table II. The following suggestions may, however, be worth considering. Until the end of 1949 life office funds were probably accumulating at a greater rate than were the demands on them from their traditional borrowers. On the one hand the profitability of rural enterprise was such that rural mortgages were being repaid, on the other hand non-farm business enterprises and individuals were probably still able to draw substantially on liquid asset holdings acquired during the war. This appears to be the background to the substantial investment (over 20 per cent of net additions to total assets in 1948-9) in ordinary and preference shares in these years; to the unorthodox life office investment by the Australian Mutual Provident Society in virgin land development in South-East Australia; and to the remark that "Whatever steps may be taken to broaden the investment field, Government loans (at $3\frac{1}{8}$ per cent) must remain an important avenue of investment."¹³ In 1950 and 1951 booming demands for finance for housing, public works and non-farm business enterprises could only be met by substantial liquidation—despite the remarks made in 1949 that have just been quoted—of holdings of Government securities. This re-allocation of resources permitted continued investment in shares—but at a reduced rate—and substantial investment in debentures and notes.

By the end of 1951 the life offices had clearly over-committed themselves as is indicated by the rise in their bank overdraft from £1.2m. in 1950 to £3.1m. in 1951.¹⁴ The first post-war break in the bond market from $3\frac{3}{8}$ per cent to $3\frac{1}{4}$ per cent in June 1951 probably contributed to this situation. Almost certainly the second break in April-May 1952 to $4\frac{1}{2}$ per cent, given the attitude of life offices to capital losses, meant that substantial recourse to the bond market in order to obtain funds for re-investment elsewhere was, temporarily at least, no longer possible. Similarly the 1951-2 slump in share prices may well

12. The rates from 1949 and 1955 are taken from the *Annual Reports* of the Life Insurance Commissioner, that for 1939 is based on the experience of the Australian Mutual Provident Society (4.4 per cent in 1939). Because of differences in definition these rates are not directly comparable. The A.M.P. rate for 1939 would have been higher if calculated on the same basis as the others.

13. Australian Mutual Provident Society's Chairman in his address to the Society's 100th Annual Meeting, 3rd June, 1949.

14. Cf. also "So far as this Society is concerned, it is clear that we have stretched our resources to the utmost—and, as our bank overdraft shows, perhaps a little further—to assist those who need our help." Australian Mutual Provident Society's Chairman's address, 13th June, 1952.

have given the life offices cause to think about this outlet for their funds. Under these circumstances, with a decline in the demand for housing and, probably, non-farm business mortgages, doubts about the share market, and higher bond rates, it was government securities and public works which felt the benefit of the continued increase in the funds available for investment by the life offices in 1953 and 1954.¹⁵ Their day was however short-lived. With the return of more or less boom conditions in the private sector in 1955 and 1956, lending to public authorities fell off. Party, perhaps, because of shifts in the types of security now being offered by companies, the share market also failed to recover its early post-war relative importance.

Private Superannuation Funds

One element in the growth of life insurance business in recent years has been the spread of superannuation schemes amongst private employers. As conducted through life offices these schemes date at least from the 1930's, though it was not until the early war years that such schemes received special mention in annual reports.¹⁶ By 1948, however, the Australian Mutual Provident Society was pointing out that "During last year (i.e. 1947) 31 per cent of our new business was written under such schemes . . ." ¹⁷ Similarly the National Mutual Life Association reported in 1952 that "Last year in Australia over 40 per cent of our new business was of this nature."¹⁸

Not all firms, however, particularly not the large ones, make use of the facilities provided by the life offices to establish and manage superannuation schemes. Separately constituted private funds, which date at least from 1890 in Australia, in fact account for a greater proportion of the total funds accruing under these schemes than do those arranged through the life offices.¹⁹ The relative importance of the two types of schemes is indicated by Table III. This table, however, gives a misleading idea of their relative rates of growth, because the coverage of the schemes organized by small firms, which are predominantly arranged with life offices, was substantially greater in the second of the two surveys from which these figures are taken.²⁰

These surveys by the Commonwealth Bureau have been a welcome contribution to an important but neglected field of Australian financial statistics. Unfortunately, as in the case of the life office returns but

15. It must be remembered, of course, that the 1953 figures for securities of local and semi-governmental authorities, as presented in Table II, are distorted along the lines discussed on p. 8 above.

16. Cf. the appearance in 1937 of a pamphlet on "group assurance" in the list of pamphlets on various aspects of life insurance which the Australian Mutual Provident Society used to include in its annual printed Chairman's Addresses.

17. Chairman's address, 4th June, 1948.

18. Chairman's address, 11th March, 1952.

19. The Colonial Sugar Refining Company Ltd. set up a private superannuation fund in 1890. See A. G. Lowndes (Ed.) *South Pacific Enterprise*, Angus & Robertson, Sydney, 1956, p. 252.

20. For details of the differences in coverage see the Commonwealth Bureau of Census and Statistics *Survey of Private Pension and Retiring Allowance Schemes*, 1955-6, p. 8.

TABLE III
Contributions to Private Superannuation Schemes
 (£000)

| — | Through Life Assurance Companies | | | Through Separately Constituted Funds | | |
|---------|----------------------------------|--------------|--------|--------------------------------------|--------------|--------|
| | By Employees | By Employers | Total | By Employees | By Employers | Total |
| 1951-52 | 3,425 | 5,385 | 8,810 | 3,749 | 8,905 | 12,654 |
| 1955-56 | 6,396 | 9,940 | 16,336 | 5,752 | 13,230 | 18,982 |

Source: Commonwealth Bureau of Census and Statistics
Surveys of Private Superannuation Schemes, 1951-2 and 1955-6

with rather more justification, they are not sufficiently detailed for many of the purposes of this inquiry. In particular the classification of assets does not distinguish between ordinary and preference shares and listed and unlisted securities, nor does it indicate how far these schemes have been infringing one of the golden rules of superannuation investment, i.e. how far funds have been invested in the securities of the companies which have themselves been responsible for setting up the schemes.

The importance of the privately constituted funds is indicated by the fact that, at least since 1951-2, they have had at their disposal a net flow of funds roughly equal to one-third of that accruing to the life offices, i.e. about £20m. in 1955-6. In the investment of these funds, as the following comparison suggests, they have been both more conservative and more venturesome than the life offices. More conservative in that they hold a substantially higher proportion of their assets in

Percentage Distribution of Assets 1956

| — | Cash | Commonwealth Bonds | Local and semi-govt. Securities | Loans on Mortgage | Debentures | Shares in Companies | Other Assets | Total |
|-----------------------|------|--------------------|---------------------------------|-------------------|------------|---------------------|--------------|-------|
| Private Pension Funds | 8 | 30 | 25 | 7 | 11 | 13 | 6 | 100·0 |
| Life Insurance | ·2 | 28·5 | 15·6 | 31·2 | 6·7 | 4·6 | 13·2 | 100·0 |

cash and government and semi-governmental securities, more venturesome in having a much higher proportion of their funds in companies' shares. They have not, however, over the last four years at least, been significantly increasing the proportion of their assets held in this form, the proportion being 12 per cent in 1951-2. In so far as they have been varying their portfolios they have been investing relatively less in Commonwealth Government securities and more in those of local and semi-governmental authorities and in company debentures.

N.S.W. State Superannuation Fund

There is one other pension fund that should also be mentioned here, namely the N.S.W. State Superannuation Fund which had its statutory

investment powers altered in 1948 so that it could be permitted to invest in company securities. This appears to be the only government pension fund which has taken action of this kind. Details of its holdings are not published but the N.S.W. Government Auditor-General's Report has given the total amount outstanding in each year since 1953.

TABLE IV

*Investment in Company Shares and Debentures by the
New South Wales Superannuation Board
(£000)*

| | 1953 | 1954 | 1955 | 1956 | 1957 |
|---|-------|-------|-------|-------|-------|
| Amount invested at 30th June .. | 4,934 | 5,806 | 6,268 | 8,015 | 9,569 |
| Net annual increase | | 872 | 462 | 1,747 | 1,554 |
| Net increase as per cent of total net increase in Fund | | 16.3 | 8.0 | 26.3 | 21.3 |

Source: Annual Reports of the N.S.W. Government Auditor-General

Quite clearly as Table IV indicates, the Superannuation Board has not hesitated to make good use of its new powers though it is still well within the statutory requirement limiting its investments in this form to 25 per cent of the total fund. It is worth noting that its purchases are made within even a narrower range of securities than that available to the life offices. That this is so follows from its statutory requirements that it only invest in the debentures and preference shares of companies which have paid a dividend of at least 3 per cent on their ordinary shares for at least five years before the time of investment and in ordinary shares of companies which have paid dividends of at least 4 per cent for at least ten years, the companies being ones with paid up capital of not less than £500,000.²¹

General Insurance Companies—Fire, Accident, Marine, etc.

Another important group of institutional investors are the general insurance companies—i.e. those concerned with fire, accident, marine, etc., business. Unfortunately, there are no official statistics relating to their asset holdings. Further, a substantial proportion of this type of business is conducted by branches of overseas companies which do not publish figures for their Australian business. Finally many of the published accounts of Australian companies of this type give a quite inadequate classification of their assets. For all these reasons, then, it is possible to make only very rough estimates of the investment behaviour of the general insurance companies. Even more so than in the case of the life offices, it is time that these companies should be required to provide useful data on their operations.

Such estimates as it has been possible to make suggest that the total amount of funds entering the capital market for company securities through these companies was of the order of £2m. around 1956.

21. For details of these requirements see the Superannuation (Amendment) Act. N.S.W. Statutes No. 9, 1948.

The basis of this calculation is as follows: the accounts of 21 Australian companies, as published in the *Australasian Insurance and Banking Record*, indicated that in 1955 these companies held company securities worth £6,164,000 out of total assets of £54,856,000.²² In 1956 these holdings had increased to £6,907,000 out of a total of £59,466,000. In 1954-5 this same group of companies appears to have received about 35 per cent of the total investment income of all general insurance companies as published in the official (*Finance Bulletin*) returns of income and expenditure of the general insurance companies. If this ratio (35 per cent) is applied to the increase in holdings of company securities by the 21 companies in 1955-6 (£750,000), it would appear that some £2m. was invested in company securities in that year by all general insurance companies. This calculation is, of course, dependent on the assumption that the companies for whom balance sheets are not available held company securities in the same proportion (11 per cent) to total assets as did the 21 companies. There is no reason for believing that this assumption is unrealistic and hence a fair chance that the above calculation yields an estimate of the right order of magnitude. Unfortunately, however, it is impossible to gauge what proportions of this amount were invested in the different types of company securities.

Management Investment Trusts

In some countries, notably the United Kingdom, management investment trusts are, or have been at various times, important institutional investors. This is not the case in Australia. While there were eighteen such listed companies at 30th June, 1956, three of which were almost thirty years old, they had an aggregate paid-up capital of only £5.5m. at that date. Unlike their British prototypes their capital was entirely in ordinary shares, no use had been made of debentures and their external liabilities were almost wholly of a short-term nature—mainly taxation and dividend provisions and bank overdraft. This, together with the fact that they have retained only a relatively small proportion of their earnings, means that their entire holding of securities amounted to only about £8m. It is true that this amount was a substantial increase on the £1.1m. capital (about £1.5m. total investments) of the six listed companies at 30th June, 1946. Most of the increase in these holdings of company securities was, however, financed through new share issues and it is doubtful whether much of these issues represented net new money for investment in company securities. This is so, in particular, because the majority of management investment trusts are intimately connected with share broking firms and it is probable that the bulk of the new issues has been subscribed by the existing clientele of those firms. There seem to be good grounds for believing, then, that management investment trusts are responsible for only about one quarter of a million pounds of the net new money currently coming on to the new issue market in Australia.

22. Wherever possible holdings of non-listed company securities were excluded from this calculation.

Unit Trusts

Unit trusts are operated by managers who purchase, in the market, relatively large parcels of shares in a particular group (fixed unit) or within a particular range (flexible unit) of companies. The securities are deposited with Trustees and certificates representing fractional units or sub-units are sold to the public. In order to give marketability to the sub-units, once a trust is established the managers are prepared to re-buy and re-sell sub-units at a price determined by the current prices of the underlying parcel of securities, subject to a fixed margin between buying and selling prices. Unlike the management investment trusts, the unit trust movement, which was founded in Australia in 1936, has expanded vigorously in the post-war period.²³ Two fixed unit trusts—one centred in Brisbane, the other in Sydney—have been responsible for this development. The latter has been particularly active. Not only has it established subsidiary companies or branches in each of the State capital cities, it has also, within New South Wales at least, set up branches in three of the major country centres—Newcastle, Wollongong and Wagga Wagga—and a network of agencies with chartered accountants, solicitors, etc., in over ninety (early 1958) country towns. To provide business for this large number of selling points it has undertaken an extensive advertising programme making use of such media as pamphlets, circular letters, and large-scale advertisements in the daily and financial press and over the radio.

The results of this activity are indicated in Table V which gives the number of units (roughly equivalent to one pound) which had been issued at various times since 1951. These figures are not exact

TABLE V
Unit Investment Trusts
'000 units issued

| | 30th April 1951 | 31st December 1955 | 31st December 1956 |
|---------------------------|--------------------|-----------------------|-----------------------|
| "Sydney" trusts | 1,855 | 13,761 | 18,337 |
| "Brisbane" trusts | 2,423 | 3,904 | 3,758 |
| Total | 4,278 | 17,665 | 22,095 |

Source: Jobson's *Digest Year Book of Public Companies* 1951, 1956, 1957

indications of the purchase of securities. On the one hand it is not clear whether the returns were complete at the dates given in the table, on the other the price of the units generally includes the cost of establishing and managing the trusts, a cost which seems to range from 7½ per cent to 10 per cent of the purchase price of the actual securities themselves. When allowance is made for these facts, it would appear that, by 1956, some £4m. was being invested annually through unit trusts—the whole of this amount being invested in ordinary shares.

23. Even greater expansion now seems likely with the decision of the Bank of New South Wales and the Australia and New Zealand Bank to enter the unit-trust field.

Investment on this scale is quite significant, particularly when account is taken of the relatively narrow markets for company securities in Australia. There are, indeed, hints that the success of the movement has been such that the managers have been forced to change their types of trust. Thus the Sydney managers originally offered fixed trusts based on the securities of 20 companies. In 1954 they had increased this number to 30 and in 1955 to 40. In the meanwhile, in 1948, they had begun offering flexible unit trusts and it is in this form that the bulk of their business is now done. Further evidence of the scale of their operations was given in the dispute which arose between Australian Fixed Trusts Pty. Ltd. (the managers of the Sydney group of trusts) and Clyde Industries Ltd. in November 1956. At that time the trusts held 292,000 shares (market price per share 28/- at 7th November, 1956) in Clyde Industries or 14·7 per cent of the total. The directors of Clyde Industries had apparently become concerned about the size of the voting power represented by this holding and proposed an amendment to the company's articles of association which effectively disenfranchised unit trusts. Despite much criticism from the trusts and an appeal by them to the Equity Court the amendment was adopted. Whether or not the particular restrictions adopted by Clyde Industries were the solution to the problems raised by the scale of the fixed trusts' share holdings is not of concern here, what is important to note in this context is that by 1956 the funds controlled by the fixed trusts had grown to such extent that, for the first time, they could give rise to problems of this type.²⁴

Other Non-Financial Companies

Finally, there is the group of institutional investors represented by miscellaneous non-financial companies not included in any of the previous categories. A large number of listed companies, possibly a majority of them, has holdings of shares in other listed companies. For listed companies as a whole, of course, increases in such holdings involve no net addition of available finance. To the extent, however that such securities are held and used as a type of liquid reserve and not merely as a type of trade investment, purchases and sales of listed securities by listed companies can have important effects on the nature of the public capital market, e.g. by increasing the general marketability of listed securities. Unfortunately, while it is possible, with qualifications, to make estimates of changes in the holdings of listed company securities, it is not possible to distinguish between the two categories just mentioned.²⁵ All that is really worth noting here is that holdings of listed securities by companies are quite substantial and that at times changes in and increases of them may be important for interpreting the behaviour of the market.

24. For comment on this dispute see *The Sydney Morning Herald* 2nd, 3rd, 4th, 9th November, 1956, and 18th December, 1956.

25. See the writer's *Australian Company Finance*, Canberra, 1956, pp. 49-50, 135 for some estimates of holdings of listed securities by Australian companies; p. 11 for the qualifications to them.

Summing Up

Against the background of the previous discussion it is now possible to make a rough assessment of the size of institutional investment in listed company securities. As has been indicated, certain of the figures in Table VI which attempts to summarize the information collected above, are little more than guesses. It is felt, however, that they

TABLE VI

*Annual Institutional Investment in Listed Company Securities about 1956**

| (£m.) | Shares | Debentures and Notes |
|---|---------------|----------------------|
| Life Insurance Offices | 2 | 6 |
| Private Pension Funds | 1 | 1 |
| N.S.W. Government State Superannuation Fund | 1 | 1 |
| General Insurance Companies | 1 | 1 |
| Management Investment Trusts | $\frac{1}{2}$ | |
| Unit Trusts | 4 | |
| Total | 9 | 9 |

* It should also be noted that in recent years the trading banks have invested in one group of listed companies, namely hire-purchase companies. By early 1958 trading bank investment in shares of these companies was about £12m. See Bank of New South Wales *Review* No. 33, May, 1958, p. 7.

are of the right order of magnitude. They are, for instance, certainly not inconsistent with the official estimates of new money raised from banks, life insurance companies and superannuation funds in 1956-7, which were £1.6m. in shares and £6.6m. in debentures, registered notes and deposits.²⁶

At about this time, i.e. about 1956, the new money being raised by companies listed on the stock exchanges amounted to about £100m. per annum. If the convention may be accepted, that the money employed by institutions in purchasing existing securities on the stock exchanges eventually finds its way into the new issue market, then it would appear that, by 1956, institutions were supplying directly or indirectly about 20 per cent of the new money raised through the new issue market. As the institutions invested virtually nothing in this fashion during the inter-war period, it is clear that there has been a significant growth of institutional interest in the new issue market in the post-war period. While it is true that this interest could not yet be described as a dominant one, there can, nevertheless, be little doubt that companies must be increasingly concerned, when deciding on the form of their new issues, that they do not conflict with the requirements of institutional investors.

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26. Commonwealth Bureau of Census and Statistics, *New Capital Raisings by Companies in Australia*, quarter ended 30th September, 1957.

THE FINANCE OF PUBLIC INVESTMENT, AUSTRALIA 1948/49—1956/57

This paper attempts to answer a simple question which has often been asked but which, extraordinary as it may seem, no one has been able to answer with any precision: how has Australian public investment been financed in the post-war years? There are, in principle, only four possible sources of finance: (a) current budget surpluses, (b) borrowing from the Australian public, (c) borrowing overseas and (d) central (or trading) bank finance. It might be thought to be an easy matter to ascertain from the wealth of official financial statistics how much of total public investment has been financed from each of these sources. Actually, the conventional and, from an economist's point of view, not always convenient form in which the public accounts are presented makes this a herculean task, even for the Commonwealth alone, let alone for the States and local and semi-governmental authorities. It becomes manageable only because the National Income White Paper goes some way towards bringing the required data together.¹

From Tables VIII, IX and XI of the 1956/57 White Paper it is possible to piece together a summarized capital account for the public authority sector. But for the purpose of distinguishing the four sources of finance it is not entirely satisfactory. It conceals some relevant items through excessive aggregation (e.g. some direct central bank finance is lumped in with public loan raisings) and it is impossible to separate out the capital account of the Commonwealth from that of the States. This in turn makes it impossible for the user to reconcile the White Paper figures either with the Commonwealth public accounts as given in the budget papers or with the official figures for the Loan Council programme.

The first and main object of this paper is, therefore, threefold. First, to present a capital account of the public authority sector which will show the four sources of finance of public investment for the years 1948/49 to 1956/57. Secondly, to trace back all items in the Commonwealth part of the account, and as many as possible of the States' part, to their sources in the Commonwealth public accounts, so that readers of the White Paper can in future perform the operation themselves, at least for all major items. And thirdly, to reconcile this capital account with the official figures for the Loan Council programme as presented in recent years in the Commonwealth *Budget Speech*. No attempt has been made to extend the search for sources to the public

1. The author must also acknowledge with gratitude the help given to him by officers of the Commonwealth Bureau of Census and Statistics and Commonwealth Treasury, and especially to Mr. R. Jay, Miss K. Gleeson and Mr. R. Daniel. Without their guidance through the Commonwealth public accounts and their explanations of the methods used in the construction of the public authority tables in the White Paper, this paper could not have been written.

accounts of the States and their semi- and local government bodies. Once the Commonwealth capital account is available, the State figures can be obtained by difference from the White Paper.

Capital Account and Sources

Tables I and II present the capital accounts of the Commonwealth (including semi-government bodies) and the States (including semi-government bodies) respectively. Tables III and IV show the published sources from which the accounts can be built up. In the case of the Commonwealth account, it has been possible to trace back almost every item to the public accounts. The only exceptions are a number of items relating to Commonwealth semi-government bodies (e.g. depreciation allowances, and parts of the current surplus) where Table VIII of the White Paper can be relied upon. In the case of the States account, separate references are given only to those items, such as loan raisings and redemptions, which appear in the Commonwealth public accounts. All other items (except S7b) can be obtained by deducting the Commonwealth amount from the total given in Table XI of the White Paper.

Most of the individual items in Tables I-IV are self-explanatory. Those which may not be are explained in notes to Tables III and IV.

Loan Council Programme

The annual Loan Council programme for the finance of the States' works and housing programme was a relatively simple matter until 1950/51. Since 1951/52 when the Commonwealth began to support the programme from its budget surplus and other sources, the financial operations to which it gives rise have assumed great complexity. The main contributions to the finance of the programme have in recent years been explained in one of the attachments to the annual Commonwealth *Budget Speech*. But the figures given there bear, at first glance, no resemblance to those for similarly named items in the budget papers or the White Paper. Table V gives a reconciliation of the Loan Council programme for the years 1951/52 to 1956/57 with the Commonwealth capital account of Table I. Part I of Table V reproduces the table given in the 1956/57 and 1957/58 *Budget Speech* documents. Part II shows, on the model of the data for 1955/56 and 1956/57 given in the same documents, how the Commonwealth's "special assistance" was financed. Part III gives the reconciliation with Table I. As Part III shows, the net balance of all items of the capital account other than those included in the Loan Council programme equals the increase in Commonwealth Trust Fund balances, n.e.i., which appears as the residual item in Part II.

Sources of Finance—Provisional Answer

Table VI gives a provisional answer to the question posed at the beginning of this paper. It presents a consolidated capital account for the whole public authority sector (Commonwealth and States) divided up so as to show the four sources of finance of public investment. (In

the process of aggregation, all transactions between the Commonwealth and States, such as the special loan and Commonwealth advances and capital grants to the States, of course, disappear.) Table VII gives the shares of the four sources of finance in percentages.

In broad outline, the facts which it reveals are, of course, familiar.² Much the greater part of the finance of public investment in the post-war years has come from revenue surpluses. Until 1950/51, the domestic loan market still made a major contribution; net loan raisings provided more than half the amounts required for public investment. Between them, revenue surplus and borrowing from the Australian public (including the substantial accumulations of stabilization funds) provided enough money to meet all public investment finance and make possible some redemption of overseas debt and treasury bills. Since 1951/52, the contribution of borrowing from the Australian public has dwindled (to 10 per cent in 1956/57). Revenue surpluses have continued to provide rather more than three-quarters of the amount spent on public investment, most of the deficiency in domestic loan raisings being made up by net borrowing, instead of net redemption, from overseas and from the central bank. Much the greater part of the revenue surplus, of course, represents Commonwealth taxation. Even if we choose to treat all current Commonwealth expenditure as a first charge on tax revenue, of the Commonwealth's own cumulative current surplus over the nine years of £1,717 million, £1,538 million represented surpluses of taxation over current expenditure. It should be remembered, moreover, that the State surpluses came out of revenue to which Commonwealth grants for current purposes made a large contribution. (The cumulative States' surpluses of £569 million compare with a cumulative total of Commonwealth grants to the States for current purposes of £1,332 million.)

The answer to our question provided by Table VI, however, is misleading in one important respect. In suggesting that, over the period as a whole, central bank finance made no net contribution to the finance of public investment, it takes into account direct Government borrowing from the central bank but makes no allowance for the central bank's indirect contribution through other purchases of government securities.

Other Central Bank Finance

The Commonwealth Bank's transactions in government securities, including its open market operations—in marked contrast to the United States where detailed figures are published weekly—are a jealously guarded state secret in Australia. All relevant information is carefully published in a form which conceals the change in central bank holdings of Commonwealth Government bonds.

Table VIII shows the two main methods by which one might expect to deduce this figure, one based on the Commonwealth Bank's annual

2. See the able article on "Financing Public Works", *I.P.A. Review*, October-December 1957.

balance sheet, the other on its statistics of the distribution of bond holdings. One source of error in both methods is the fact that large transactions occur in the last days of June of each year, so that figures relating to June 30 cannot be reconciled with others relating to the average of the four Wednesdays of June. A possible source of error in the second method is changes in Commonwealth Savings Bank (and recently also other savings bank) holdings of treasury bills. Except for the year 1949/50, however, the two methods yield not dissimilar results. Until the authorities make accurate figures available, we cannot do better than take the average results of both methods as indicating the general trend of other central bank finance, including open market operations (Table VIII, Part III). This would suggest that of the £1,029 million, which appear in Table VI as the Australian public's contribution over the nine year period to the finance of public investment through the bond market, some £150 million must really be ascribed to central bank finance.^{2a}

One further refinement might be attempted. If we are interested in the contribution to the finance of public investment made by the creation of new money, we cannot confine our attention to central bank finance.³ Trading banks create money. While we cannot say whether trading bank bond purchases in any year come from new bank money—it depends on what the trading banks would have done with their funds had they not invested them in bonds—there is every reason to assume that part of the increase in trading bank bond holdings over a decade (particularly a decade such as the last in which bank deposits have expanded greatly) has constituted "secondary credit creation". How much should be attributed to this source of finance there seems no way of determining.

What we can show is the contribution to loan finance by the banking system as a whole. Table IX which is based on the Commonwealth Bank's statistics on the distribution of bond holdings⁴ shows that of the total increase in non-governmental Australian holdings of Commonwealth bonds over the nine year period of £616 million, the banking system as a whole bought £418 million, all other investors only £189 million. Moreover, almost the whole of the latter contribution was

2a. Since this paper was written, the Commonwealth Bank has momentarily lifted the curtain. Dr. H. C. Coombs, in his R. C. Mills Memorial Lecture on *Conditions of Monetary Policy in Australia*, 29th April, 1958, stated that "the net results of the Central Bank's security transactions were a fall of about £30 million in 1953/54 and increases of about the same size in each of the two following years". This compares with our "estimate" of a fall of £49m. in 1953/54 and increases of £24m. in 1954/55 and £30m. in 1955/56. Unfortunately, it cannot be assumed that our method would always yield such lucky guesses.

3. It might be mentioned that the *real* source of finance of public investment through new money creation need not be forced saving produced by inflation. If the money supply expands in step with the growth of real GNP (implying, *cet. par.*, a constant price level), the *real* source is the real income forgone by those who, in the absence of any increase in money supply, would have reaped the benefits of a rising GNP through falling prices.

4. No attempt has been made to reconcile the Commonwealth Bank's data on the increase in *total* Australian holdings of Commonwealth Government securities with the capital account in Table VI.

made in the years 1948/49 to 1950/51. Since 1951/52, total purchases by non-banking investors (including life assurance and trustee offices, etc.) have amounted to only £22 million or less than 1 per cent of total public investment over the six years. (This, of course, overstates the decline in the contribution of the public, since savings bank and part of trading bank purchases represent voluntary domestic saving.)

Tail Piece

In conclusion, a plea for better statistics.

To the Commonwealth Statistician:

(a) for inclusion in the White Paper of a public authorities capital account, if possible separately for Commonwealth and States; or at least a breakdown of Table XI by Commonwealth and States;

(b) for early publication of a classification of receipts and outlay of government bodies, relating the public authority tables of the White Paper to their sources in the Commonwealth and State public accounts.

To the Commonwealth Treasury:

(a) for a fuller "Summary of Financial Results" at the beginning of the appendix to the *Budget Speech*, somewhat on the lines of our Table V;

(b) as a longer-term project, an economic code classification of all items in the Commonwealth budget papers;

(c) publication of Loan Council Papers and Minutes, if necessary with a time lag of (say) five years.

To the Commonwealth Bank:

(a) for data on central bank open market operations and other transactions in government securities, if necessary with a time lag of (say) three years.

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TABLE I
Commonwealth (incl. Semi-Govts.)—Capital Account
£ million

| | 1948/9 | 49/50 | 50/1 | 51/2 | 52/3 | 53/4 | 54/5 | 55/6 | 56/7 |
|--|--------|-------|------|------|------|------|------|------|------|
| FUNDS AVAILABLE | | | | | | | | | |
| A. Revenue | | | | | | | | | |
| C1 | 115 | 102 | 202 | 282 | 168 | 213 | 214 | 223 | 301 |
| C2 | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 4 |
| Total | 117 | 104 | 204 | 285 | 170 | 216 | 216 | 226 | 305 |
| B. Borrowing | | | | | | | | | |
| C3 | — | — | — | 45 | 72 | — | — | 5 | — |
| C4 | — | — | — | — | 15 | — | — | — | — |
| | | | | | 31 | 48 | 28 | 47 | 34 |
| C5 | 71 | 62 | 2 | 38 | 17 | 22 | 24 | 18 | 3 |
| C6 | — | — | 4 | 25 | — | 6 | 6 | 6 | 3 |
| C7 | — | — | — | — | — | 6 | — | 9 | 38 |
| C8 | — | — | 11 | — | 12 | — | — | — | — |
| Total | 71 | 62 | 17 | 108 | 147 | 82 | 58 | 85 | 78 |
| C. Other | | | | | | | | | |
| C9 | — | — | — | — | — | 1 | 1 | — | — |
| C10 | 40 | 14 | 63 | — | — | 7 | 1 | — | — |
| C11 | — | — | — | — | 6 | 23 | 3 | 4 | — |
| C12 | — | — | — | 22 | — | 5 | 1 | 6 | — |
| C13 | 1 | — | 4 | 2 | — | — | — | — | — |
| Total | 41 | 14 | 67 | 24 | 6 | 36 | 6 | 10 | — |
| Total Funds Available .. | 229 | 180 | 288 | 417 | 323 | 334 | 280 | 321 | 383 |
| DISPOSAL | | | | | | | | | |
| A. Debt Redemption & Repurchase | | | | | | | | | |
| C3 | 85 | 15 | — | — | — | 35 | 30 | — | 15 |
| C14 | 2 | 7 | 7 | 6 | 8 | 5 | 4 | 3 | 3 |
| C15 | 33 | 39 | 61 | 32 | 22 | 17 | 36 | 46 | 76 |
| C16 | — | 5 | 2 | 1 | 1 | 10 | 5 | — | — |
| C8 | 23 | — | — | 2 | — | — | — | — | — |
| Total | 143 | 66 | 70 | 41 | 31 | 67 | 75 | 49 | 94 |
| B. Public Investment | | | | | | | | | |
| C17 | 29 | 42 | 55 | 74 | 69 | 66 | 68 | 78 | 82 |
| C11 | 2 | 8 | 8 | 6 | 1 | — | — | 3 | — |
| C9 | 1 | 2 | 2 | 1 | 3 | — | — | 1 | 1 |
| Total | 32 | 52 | 65 | 81 | 73 | 66 | 68 | 82 | 83 |
| C. Loans & Grants | | | | | | | | | |
| C18 | — | — | — | 160 | 123 | 80 | 48 | 93 | 99 |
| C19 | 16 | 20 | 24 | 26 | 30 | 42 | 31 | 38 | 39 |
| C20 | 7 | 9 | 15 | 17 | 17 | 23 | 23 | 31 | 36 |
| C21 | 8 | 16 | 23 | 24 | 23 | 20 | 22 | 27 | 25 |
| Total | 31 | 45 | 62 | 227 | 193 | 165 | 124 | 189 | 199 |
| D. Other | | | | | | | | | |
| C10 | — | — | — | 66 | 22 | 35 | 12 | — | — |
| C22 | 6 | 3 | 62 | 2 | 1 | 1 | 1 | 1 | 3 |
| C12 | 17 | 12 | 29 | — | — | — | — | — | 1 |
| C13 | — | 2 | — | — | 3 | — | — | — | 3 |
| Total | 23 | 17 | 91 | 68 | 26 | 36 | 13 | 1 | 7 |
| Total Disposal .. | 229 | 180 | 288 | 417 | 323 | 334 | 280 | 321 | 383 |

TABLE II
States (incl. Semi-Govts.)—Capital Account
£ million

| | 1948/9 | 49/50 | 50/1 | 51/2 | 52/3 | 53/4 | 54/5 | 55/6 | 56/7 | |
|--|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| FUNDS AVAILABLE | | | | | | | | | | |
| A. Revenue | | | | | | | | | | |
| S1 | Current surplus | 29 | 33 | 45 | 49 | 75 | 86 | 88 | 74 | 90 |
| S2 | Depreciation allowances .. | 3 | 4 | 4 | 5 | 8 | 12 | 14 | 18 | 18 |
| C20 | C'wealth grants for capital purposes | 7 | 9 | 15 | 17 | 17 | 23 | 23 | 31 | 36 |
| | Total | 39 | 46 | 64 | 71 | 100 | 121 | 125 | 123 | 144 |
| B. Borrowing | | | | | | | | | | |
| S3 | Treasury bills (public) .. | — | — | 2 | — | — | — | — | — | — |
| S4 | Domestic raisings | 3 | 3 | 9 | 7 | 7 | 8 | 8 | 6 | 1 |
| S5 | Public loan raisings—Aust. .. | 79 | 78 | 147 | 203 | 158 | 155 | 143 | 149 | 158 |
| S24 | Commonwealth Bank | — | 7 | 12 | — | — | — | — | — | — |
| S7 | Overseas borrowing | 6 | — | — | — | — | — | 3 | 10 | 6 |
| S8 | Decrease in bond holdings .. | 1 | 1 | 1 | 4 | 1 | — | — | — | — |
| C19 | Advances from C'wealth (net) .. | 16 | 20 | 24 | 26 | 30 | 42 | 31 | 38 | 39 |
| S23 | Local & semi-govt. securities (net) | 21 | 37 | 66 | 60 | 71 | 65 | 63 | 55 | 66 |
| | Total | 126 | 146 | 261 | 300 | 267 | 270 | 248 | 258 | 270 |
| C. Other | | | | | | | | | | |
| S25 | Sale of dwellings | — | — | 1 | 1 | 1 | 1 | 6 | 16 | 16 |
| S11 | Decrease of stocks | — | — | — | — | 12 | — | — | — | — |
| S12 | Use of cash | 4 | — | — | 18 | — | 17 | 32 | — | — |
| S13 | Other funds available | 1 | 5 | 8 | — | 6 | 7 | 1 | 10 | 10 |
| | Total | 5 | 5 | 9 | 19 | 7 | 20 | 25 | 39 | 26 |
| | Total Funds Available .. | 170 | 197 | 334 | 390 | 374 | 411 | 398 | 420 | 440 |
| DISPOSAL | | | | | | | | | | |
| A. Debt Redemptions & Repurchases | | | | | | | | | | |
| S3 | Treasury bills (public) .. | — | — | — | 2 | — | — | — | — | — |
| S15 | C'wealth bonds—Aust. .. | 30 | 15 | 25 | 19 | 15 | 14 | 15 | 19 | 20 |
| S16 | C'wealth bonds—overseas .. | 15 | 9 | 18 | 1 | — | 6 | 4 | 9 | 6 |
| S8 | Increase in Govt. bond holdings | — | — | — | — | — | 18 | 11 | 5 | 1 |
| | Total | 45 | 24 | 43 | 22 | 15 | 38 | 30 | 33 | 27 |
| B. Public Investment | | | | | | | | | | |
| S17 | Public works | 113 | 156 | 233 | 319 | 316 | 331 | 348 | 361 | 373 |
| S9 | Purchases of existing real assets (net) | 5 | 4 | 15 | 5 | 2 | 6 | 5 | 4 | 2 |
| S11 | Increase in stocks | 6 | 12 | 11 | 35 | 4 | — | — | 7 | 4 |
| | Total | 124 | 172 | 259 | 359 | 322 | 337 | 353 | 372 | 379 |
| C. Loans and Grants | | | | | | | | | | |
| S21 | Advances to public (net) .. | 1 | 1 | 3 | 8 | 6 | 6 | 14 | 14 | 26 |
| D. Other | | | | | | | | | | |
| S22 | Capital transfers | — | — | — | — | 1 | 1 | 1 | 1 | 1 |
| S12 | Increase in cash balances .. | — | — | 29 | — | 30 | 29 | — | — | 7 |
| S13 | Other uses of funds | — | — | — | 1 | — | — | — | — | — |
| | Total | — | — | 29 | 1 | 31 | 30 | 1 | 1 | 8 |
| | Total Disposal | 170 | 197 | 334 | 390 | 374 | 411 | 398 | 420 | 440 |

TABLE III
Commonwealth Capital Account—Sources
£ million

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Notes | Sources |
|--|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| C1 <i>Current Surplus</i> | | | | | | | | | | | |
| a total receipts | 377 | 451 | 621 | 715 | 798 | 767 | 812 | 899 | 935 | | WP. Table VIII |
| b less net increase in indebtedness | 73 | 42 | 64 | 186 | 82 | 133 | 125 | 113 | 184 | | do. |
| C2 less depreciation allowances | -2 | -2 | -2 | -3 | -2 | -3 | -2 | -3 | -4 | | do. |
| current receipts | 448 | 491 | 683 | 898 | 878 | 897 | 935 | 1009 | 1115 | | do. |
| c total outlay | 377 | 451 | 621 | 715 | 798 | 767 | 812 | 899 | 935 | | do. |
| C17a less public works | -26 | -39 | -50 | -68 | -64 | -61 | -62 | -70 | -74 | | do. |
| C17b add public works in C'wth Territories.. .. . | 3 | 8 | 5 | 6 | 5 | 5 | 6 | 8 | 8 | | BP. 1955/6, p. 49 (CRF) |
| C11 less increase in stocks | -2 | -8 | -8 | -6 | -1 | -7 | 1 | -3 | -3 | (b) | WP. Table VIII |
| C22 less capital transfers | -6 | -3 | -62 | -2 | -1 | -1 | -1 | -1 | -3 | | do. |
| C20 less grants to States for capital purposes | -7 | -9 | -15 | -17 | -17 | -23 | -23 | -31 | -36 | | BP. 1955/6, p. 14 (CRF) |
| current outlay | 333 | 389 | 481 | 616 | 710 | 684 | 721 | 786 | 814 | | |
| Current surplus | 115 | 102 | 202 | 282 | 168 | 213 | 214 | 223 | 301 | | { BP. 1955/6, p. 134 (Misc.) BS. 1957/8, p. 2 |
| d of which Transfers from C.R.F... .. . | (c) | (c) | (c) | 99 | 13 | 56 | 70 | 62 | 112 | (c) | |
| C2 <i>Depreciation allowances</i> | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 | 4 | | WP. Table VIII |
| C3 <i>Treasury bills (public)</i> | -85 | -15 | - | 45 | 72 | -35 | -30 | 5 | -15 | | BP. 1955/6, p. 89 (LF) |
| C4 <i>Commonwealth domestic raisings</i> | - | - | - | - | 15 | - | - | - | - | | BP. 1955/6, p. 121 (Chr. L) |
| C5 <i>Public loan raisings—Australia</i> | | | | | | | | | | | |
| a C'wth stocks & bonds—works, etc. | 17 | 21 | 28 | 28 | 30 | 37 | 29 | 43 | 39 | | BP. 1955/6, p. 89 (LF) |
| b do. war & repat. | 43 | 29 | - | 9 | 14 | 5 | 3 | 3 | -5 | | do. |
| c advance subscriptions | 11 | 11 | -26 | .. | 3 | 6 | -5 | 3 | -5 | | do. |
| C4 less C'wth domestic raisings | - | - | - | - | -15 | - | - | - | - | (a) | BP. 1955/6, p. 121 (Chr. L) |
| | 71 | 62 | 2 | 38 | 31 | 48 | 28 | 46 | 34 | | |

TABLE III—continued

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Notes | Sources | |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|---|
| <i>International Bank loans</i> | | | | | | | | | | | | |
| C6 | | | | | | | | | | | | |
| a | — | — | 4 | 25 | 17 | 21 | 24 | 19 | 5 | | | |
| b | — | — | — | — | — | — | — | -1 | -3 | | | BP, 1955/6, p. 89 (LF) NDC, Report 1956, p. 10 |
| | — | — | 4 | 25 | 17 | 21 | 24 | 18 | 3 | (a) | | |
| <i>Other overseas borrowing</i> | | | | | | | | | | | | |
| C7 | | | | | | | | | | | | |
| a | — | — | — | — | — | 6 | 6 | — | — | | | BP, 1955/6, p. 89 (LF) |
| b | — | — | — | — | — | — | — | 7 | — | | | do. |
| c | — | — | — | — | — | — | — | 1 | .4 | | | do. |
| d | — | — | — | — | — | — | — | — | 4 | | | do. |
| | — | — | — | — | — | 6 | 6 | 6 | 3 | (a) | | |
| <i>Increase in Government bond holdings</i> | | | | | | | | | | | | |
| C8 | | | | | | | | | | | | |
| a | 44 | 37 | 89 | 124 | 80 | 77 | 86 | 83 | 84 | | | BP, 1955/6, p. 6 (Tr. B.) |
| b | -41 | -19 | -87 | 37 | 76 | -29 | -35 | 8 | -20 | | | BP, 1955/6, p. 7 (Tr. B.) |
| C18 | — | — | — | -160 | -123 | -80 | -48 | -93 | -99 | | | BP, 1955/6, pp. 120f (Chr. L) |
| c | -2 | -3 | -4 | -5 | -5 | -5 | -6 | -7 | -6 | (d) | | BP, 1955/6, pp. 81f (TF) |
| d | .. | -1 | .. | .. | .. | .. | .. | .. | 3 | | | do. |
| e | .. | .. | .. | .. | .. | 27 | .. | .. | .. | | | do. |
| f | .. | .. | .. | .. | .. | .. | .. | .. | .. | | | do. |
| f | .. | .. | .. | .. | .. | .. | .. | .. | .. | | | do. |
| g | 22 | -15 | -9 | 6 | -10 | 4 | 1 | — | -1 | (e) | | A. G. Suppl. 1955/6 |
| | 23 | .. | -11 | 2 | -12 | -6 | .. | -9 | -38 | (a) | | |
| <i>Purchases of existing real assets</i> | | | | | | | | | | | | |
| C9 | | | | | | | | | | | | |
| a | 1 | 2 | 3 | 3 | 5 | .. | .. | 2 | 2 | (f) | | Estimates 1955/6 |
| b | — | — | -1 | -2 | -2 | -1 | -1 | -1 | -1 | (g) | | A. G. Suppl. 1955/6 |
| | 1 | 2 | 2 | 1 | 3 | -1 | -1 | 1 | 1 | | | |
| C10 | 40 | 14 | 63 | -66 | -22 | -35 | -12 | .. | .. | | | WP, Table XI |
| C11 | 2 | 8 | 8 | 6 | 1 | -7 | -1 | 3 | .. | | | WP, Table VIII |

TABLE III—continued

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Notes | Sources |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| C12 <i>Increase in cash balances</i> .. | 7 | -6 | -4 | 5 | -6 | 4 | -1 | 2 | 2 | | BP. 1955/6, p. 6 (Tr. B.) BP. 1955/6, pp. 81f (TF) |
| a increase in C'wth cash balances .. | .. | .. | .. | .. | 29 | -27 | -2 | .. | .. | | |
| C8e increase in fixed deposits .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | | |
| b increase in semi-govt. cash balances (incl. fixed deposits): Aust. Wool Realization Commission .. | 11 | 16 | 33 | -29 | -30 | .. | .. | -6 | -1 | (h) | A. G. Suppl. 1955/6, §23 A. G. Suppl. 1955/6 |
| c other .. | -1 | 2 | .. | 2 | 1 | .. | .. | -6 | -1 | | |
| C13 <i>Other funds available (e.o.i.)</i> .. | 17 | 12 | 29 | -22 | -6 | -23 | -3 | -4 | 1 | (i) | Residual |
| C14 <i>Savings certificates</i> | 1 | -2 | 4 | 2 | -3 | 5 | 1 | 6 | -3 | | |
| a savings certificates issued .. | 6 | .. | .. | .. | .. | .. | .. | .. | .. | | BP. 1955/6, p. 89 (LF) |
| b redemptions from Loan Fund .. | -8 | -7 | -7 | -6 | .. | .. | .. | .. | .. | | BP. 1955/6, p. 88 (LF) |
| c redemptions from Sinking Fund .. | .. | .. | .. | .. | -2 | .. | .. | .. | .. | | NDC. Report 1956, p. 10 |
| d redemptions from C.R.F. .. | .. | .. | .. | .. | -6 | -5 | -4 | -3 | -3 | | BP. 1955/6, p. 43 (CRF) |
| C15 <i>Redemptions—C'wealth bonds—Australia</i> | -2 | -7 | -7 | -6 | -8 | -5 | -4 | -3 | -3 | | |
| a from Loan Fund .. | -29 | -12 | -9 | -6 | -7 | .. | .. | .. | .. | | BP. 1955/6, p. 90 (LFE) |
| b from Sinking Fund .. | -4 | -27 | -29 | -25 | -16 | -17 | -36 | -18 | -33 | | NDC. Report 1956, p. 10 |
| C14c less redemption of savings certs. .. | .. | .. | .. | .. | 2 | .. | .. | .. | .. | | do. |
| d from cash proceeds of loans .. | .. | .. | -24 | .. | .. | .. | .. | .. | .. | | BS. 1951/2, p. 3 |
| e from Loan Consolidation & Investment Reserve .. | .. | .. | .. | .. | .. | .. | .. | -28 | -43 | | BS. 1957/8, p. 6 |
| f of which redemptions from cash proceeds not included in C5 .. | -33 | -39 | -61 | -32 | -22 | -17 | -36 | -46 | -76 | (a) | { BS. 1952/3, p. 3 1953/4, p. 13 |
| C16 <i>Redemptions—C'wealth bonds—overseas</i> | .. | .. | .. | .. | .. | .. | .. | .. | .. | | |
| a from Loan Fund .. | .. | -5 | .. | .. | .. | .. | .. | .. | .. | | BP. 1951/2, p. 117 (LF) |
| b from Sinking Fund .. | .. | -1 | -2 | -1 | -1 | -10 | -5 | -2 | -3 | | NDC. Report 1956, p. 10 |
| C6b less I.B.R.D. repayments .. | .. | .. | .. | .. | .. | .. | .. | 1 | 3 | | do. |
| | .. | -5 | -2 | -1 | -1 | -10 | -5 | .. | .. | (a) | |

TABLE III—continued

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Notes | Sources |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| C17 <i>Commonwealth public works</i> | | | | | | | | | | | |
| a public works | 26 | 39 | 50 | 68 | 64 | 61 | 62 | 70 | 74 | | WP. Table VIII BP. 1955/6, p. 49 (CRF) |
| b public works in C'wth Territories | 3 | 3 | 5 | 6 | 5 | 5 | 6 | 8 | 8 | (b) | |
| C18 <i>Special loan</i> | 29 | 42 | 55 | 74 | 69 | 66 | 68 | 78 | 82 | | BP. 1955/6, pp. 120f (Chr. L.) |
| | — | — | — | 160 | 123 | 80 | 48 | 93 | 99 | | |
| C19 <i>Advances to States (net)</i> | 14 | 17 | 22 | 27 | 30 | 37 | 29 | 33 | 32 | | BP. 1955/6, p. 90 (LFE) BP. 1957/8, pp. 31f (CRF) { 48/9-50/1; BP. 1951/2, p. 47 (CRF) 50/1-56/7; BP. 1955/6, p. 90 (LFE) NDC. Report 1956, p. 9 NDC. Report 1956, pp. 11, 20 BP. 1955/6, p. 21 (CRF) |
| a under Housing Agreement | .. | .. | .. | .. | .. | .. | .. | .. | 1 | | |
| b defence housing | .. | .. | .. | .. | .. | .. | .. | .. | 8 | | |
| c War Service Land Settlement | 3 | 4 | 4 | 5 | 6 | 4 | 4 | 8 | 8 | | |
| d less repayments to Sinking Fund | -1 | -1 | -4 | -2 | -2 | -2 | -2 | -2 | -3 | | |
| e less deposits with Sinking Fund | -1 | -1 | 3 | -3 | -3 | 4 | — | — | 1 | | |
| f less repayments of Agric. Re-Est. Loans | .. | .. | .. | .. | -1 | -1 | -1 | — | — | | |
| C20 <i>Grants to States for capital purposes</i> | 16 | 20 | 24 | 26 | 30 | 42 | 31 | 38 | 39 | (a) | |
| a C'wealth aid—roads | 7 | 9 | 14 | 15 | 16 | 22 | 22 | 27 | 32 | | BP. 1955/6, p. 14 (CRF) do. |
| b other | — | .. | 1 | 2 | 1 | 1 | 1 | 4 | 4 | (j) | |
| C21 <i>Advances to public (net)</i> | 7 | 9 | 15 | 17 | 17 | 23 | 23 | 31 | 36 | (k) | |
| a War Service Homes—capital exp. | 9 | 16 | 25 | 28 | 28 | 27 | 30 | 30 | 30 | | BP. 1955/6, p. 80 (TF) do. BP. 1955/6, p. 90 (LFE) A. G. Suppl. 1955/6 |
| b less repayments | -1 | -2 | -3 | -4 | -4 | -5 | -6 | -6 | -6 | | |
| c emergency wheat storage | .. | .. | .. | .. | .. | .. | .. | 3 | — | | |
| d advances by semi-govt. bodies (net) | .. | .. | 2 | -1 | -1 | -2 | -2 | .. | 1 | (l) | |
| C22 <i>Capital transfers</i> | 8 | 16 | 23 | 24 | 23 | 20 | 22 | 27 | 25 | (a) | |
| | 6 | 3 | 62 | 2 | 1 | 1 | 1 | 1 | 3 | | WP. Table VIII |

Notes to Table III

Symbols used:

- .. less than £500,000.
- none.

Abbreviations used:

- WP.—White Paper on *National Income and Expenditure 1956/57*.
 BP. 1955/6—Commonwealth Budget 1955/56 and corresponding entries in Budget papers for other years. The letters in brackets indicate the following sections of the *Budget*:
 LF.—Loan Fund.
 LFE.—Loan Fund Expenditure.
 CRF.—Commonwealth Revenue Fund.
 TF.—Trust Fund.
 Chr.L.—Loan Fund; Chronological List of Loans raised by Commonwealth.
 Tr.B.—Treasury Balances.
 Misc.—Miscellaneous Statistics.
 BS.—Commonwealth Budget Speeches; all page references are to the attached statements.
 Estimates 1955/6—Commonwealth Estimates of Receipts and Expenditure 1955/56 and corresponding entries in other years.
 NDC.—National Debt Commission, *Annual Reports*.
 A.G. Report 1955/6—Commonwealth Auditor-General's Annual Report for year ended 30th June, 1956, and corresponding accounts in reports for other years.
 A.G. Suppl. 1955/6—Commonwealth Auditor-General's Supplementary Report for year ended 30th June, 1956, and corresponding accounts for other years.
 Treasury—Information supplied to the author by the Secretary to the Commonwealth Treasury.

- (a) Columns may not add to totals owing to rounding. In order to retain the exact White Paper figures where they enter as such into the capital account, it has been necessary to follow the White Paper practice of "forced rounding", i.e. of ensuring exact balance

of both sides of every account, if necessary by selecting one item for rounding in the wrong direction.

- (b) The White Paper, sensibly for most purposes, includes the Commonwealth's internal territories, the Northern Territory and the A.C.T., with the States (see White Paper 1956/57, p. 22, note a). For the purposes of this paper, it has seemed better to reverse this procedure and include public works expenditure in these territories with Commonwealth public works. In addition to the territories' capital works vote, the total for each year includes two small amounts for Canberra streets (B.P. 1955/6, p. 49, CRF) and Northern Territory roads (A.G. Report 1955/6, p. 90, Commonwealth Aid—Roads).
- (c) For constitutional and political reasons, the Commonwealth public accounts never show a significant budget surplus (cf. Parliamentary Public Accounts Committee, 34th Report, *The Trust Fund*, Government Printer, Canberra, 1957). The appearance of budget surpluses is avoided by appropriation of actual surpluses to various trust accounts. The exact amount of these surpluses cannot be determined because there is no precise criterion for distinguishing appropriations to active trust accounts (such as the National Welfare Fund) to meet genuine contingencies from appropriations which serve the purpose of concealing budget surpluses. The amounts shown under C1d, which represent surplus revenue invested in the special loans, fairly clearly fall into the second category but do not necessarily constitute the whole of the concealed budget surpluses of these years. They were appropriated as follows: in 1951/52 to the National Debt Sinking Fund, in 1952/53 to the Pension Fund, in 1953/54 and 1954/55 to the Debt Redemption Reserve, and in 1955/56 and 1956/57 to the Loan Consolidation and Investment Reserve. The amounts which can reasonably be identified as concealed surpluses (or deficits) in the earlier years are: in 1948/49, £30.1 million appropriated to the War Gratuity Reserve (BP. 1949/50, p. 106); in 1949/50, —£25.5 million appropriated from Loan Fund for current war and repatriation expenditure (BP. 1950/1, p. 118); in 1950/51, £57 million appropriated to the Strategic Stores and Equipment Reserve (BP.

- 1951/2, p. 102); and in 1951/52, £10 million to the same fund (BP, 1952/3, p. 100); (in the last two years, some expenditure was incurred out of this fund which might be treated as an offset). It might be added that the significance of these surpluses has changed in recent years with the acceptance by the Commonwealth of a *de facto* commitment to help finance the States' public works programme from its tax revenue. While the Commonwealth's assistance still takes the form of special *loans* to the States (on which interest is payable) and is therefore reasonably excluded from Commonwealth expenditure in assessing the Commonwealth's budget surplus, the required amount must nowadays be budgeted for as surely as the amount needed to finance the Commonwealth's own public works.
- (d) Includes the holdings of the Superannuation Fund, the Defence Forces Retirement Benefits Fund and the Parliamentary Retiring Allowances Fund.
- (e) 1948/49-1952/53, chiefly Australian Wool Realization Commission; 1952/53-1956/57, chiefly Australian Wool Board, Joint Coal

Board, Qantas Empire Airways and Stevedoring Industry Authority.

- (f) Comprises numerous small items, designated "acquisition of land and buildings", in the Capital Works and Services votes of the Commonwealth Estimates.
- (g) Chiefly Joint Coal Board, Whaling Commission and Flax Production Commission.
- (h) Chiefly T.A.A., Australian Stevedoring Industry Board, Joint Coal Board and Qantas Empire Airways.
- (i) C1b *less* C3-10, 12 *plus* C14-16, 18, 19, 21.
- (j) Commonwealth grants for W.A. water works, imported houses, mental institutions and tuberculosis hospitals capital expenditure.
- (k) These grants, though financed from C.R.F., are best regarded as part of the capital accounts of the Commonwealth and States. Of course, they disappear in the consolidated account for the public authority sector.
- (l) Chiefly Joint Coal Board and Whaling Commission.

TABLE I7—*Strat's Capital Account—Source*
£ million

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Notes | Sources |
|--|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
| S1 <i>Current surplus</i> | | | | | | | | | | | |
| a Total receipts | 253 | 322 | 426 | 582 | 576 | 598 | 661 | 722 | 765 | | WP. Table IX |
| b less net increase in indebtedness | -80 | -122 | -180 | -233 | -221 | -199 | -224 | -246 | -234 | | do. |
| S2 less depreciation allowances .. | -3 | -4 | -4 | -5 | -8 | -12 | -14 | -18 | -18 | | do. |
| C17b less public works in C'wth territories | -3 | -3 | -5 | -6 | -5 | -5 | -6 | -8 | -8 | (d) | BP. 1955/6, p. 49 (CRF) |
| C20 less C'wth grants for capital purposes | -7 | -9 | -15 | -17 | -17 | -23 | -23 | -31 | -36 | | BP. 1955/6, p. 14 (CRF) |
| Current receipts | 160 | 184 | 222 | 271 | 325 | 359 | 394 | 419 | 469 | | |
| c Total outlay | 253 | 322 | 426 | 582 | 576 | 598 | 661 | 722 | 765 | | WP. Table IX |
| b less public works | -116 | -159 | -238 | -325 | -321 | -386 | -354 | -369 | -381 | | do. |
| S11 less increase in stocks | -6 | -12 | -11 | -35 | -4 | 12 | .. | -7 | -4 | | do. |
| S22 less capital transfers | .. | .. | .. | .. | -1 | -1 | -1 | -1 | -1 | | do. |
| Current outlay | 131 | 151 | 177 | 222 | 250 | 273 | 306 | 345 | 379 | | |
| Current surplus | 29 | 33 | 45 | 49 | 75 | 86 | 88 | 74 | 90 | | |
| S2 <i>Depreciation allowances</i> | 3 | 4 | 4 | 5 | 8 | 12 | 14 | 18 | 18 | | do. |
| S3 <i>Treasury bills (public)</i> | .. | .. | 2 | -2 | .. | .. | .. | .. | .. | | BP. 1955/6, p. 89 (LF) |
| S4 <i>State domestic raisings</i> | 3 | 3 | 9 | 7 | 7 | 8 | 8 | 6 | 1 | (b) | { 48/9-50/1: Treasury 51/2-56/7: BS. 1956/7, p. 5 |
| S5 <i>Public loan raisings—Australia</i> | 79 | 78 | 147 | 203 | 158 | 155 | 143 | 149 | 158 | (c) | BP. 1955/6, p. 89 (LF) |
| S7 <i>Overseas borrowing</i> | 6 | .. | .. | .. | .. | .. | .. | 10 | 6 | | BP. 1955/6, p. 89 (LF) |
| a Loan Fund | .. | .. | .. | .. | .. | .. | 3 | .. | .. | | A. G Report South Australia 1955/6. |
| b South Australia | 6 | .. | .. | .. | .. | .. | 3 | 10 | 6 | | |
| S8 <i>Increase in bond holdings</i> | -1 | -1 | -1 | -4 | -1 | 18 | 11 | 5 | 1 | | Residual (WP. Table XI less C8) |
| S9 <i>Purchases of existing real assets</i> (net) | 5 | 4 | 15 | 5 | 2 | 6 | 5 | 4 | 2 | | do. (less C9) |
| S11 <i>Increase in stocks</i> | 6 | 12 | 11 | 35 | 4 | -12 | .. | 7 | 4 | | WP. Table IX |
| S12 <i>Increase in cash balances</i> | -4 | .. | 29 | -18 | 30 | 29 | -17 | -32 | 7 | | Residual (WP. Table XI less C12) |

TABLE IV—continued

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Notes | Sources |
|---|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| S13 <i>Other funds available</i> | | | | | | | | | | | |
| a other funds available (e.o.i.) .. | 1 | 4 | 10 | -1 | 6 | 7 | 7 | 1 | 10 | (c) | Residual (WP, Table XI less C13) |
| b discrepancy | — | 1 | -2 | — | — | — | — | — | — | (c) | |
| | 1 | 5 | 8 | -1 | 6 | 7 | 7 | 1 | 10 | | |
| S15 <i>Redemptions—C'wealth bonds—Australia</i> | | | | | | | | | | | |
| a from Loan Fund | -22 | -8 | -16 | -10 | -4 | .. | — | — | — | (c) | { 48/9: Treasury; 49/50-56/7: BP, 1955/6, p. 88 (L.F) NDC. Report 1956, p. 20 |
| b from Sinking Fund | -8 | -7 | -9 | -9 | -11 | -14 | -15 | -19 | -20 | | |
| | -30 | -15 | -25 | -19 | -15 | -14 | -15 | -19 | -20 | | |
| c of which redemptions from cash proceeds deducted from S5 .. | — | — | — | -10 | -4 | — | — | — | — | (a) | { BS, 1952/3, p. 3; 1953/4, p. 13 |
| S16 <i>Redemptions—C'wealth bonds—overseas</i> | | | | | | | | | | | |
| a from Loan Fund | -12 | -7 | -12 | — | .. | — | — | -8 | -5 | (c) | BP, 1955/6, p. 88 NDC. Report 1956, p. 20 |
| b from Sinking Fund | -3 | -2 | -6 | -1 | -1 | -6 | -4 | -1 | -2 | | |
| | -15 | -9 | -18 | -1 | .. | -6 | -4 | -9 | -6 | (a) | |
| S17 <i>Public works</i> | | | | | | | | | | | |
| a State public works | 116 | 159 | 238 | 325 | 321 | 336 | 354 | 369 | 381 | | WP, Table IX |
| C17b less public works in C'wth Territories | -3 | -3 | -5 | -6 | -5 | -5 | -6 | -8 | -8 | (d) | BP, 1955/6, p. 49 (CRF) |
| | 113 | 156 | 233 | 319 | 316 | 331 | 348 | 361 | 373 | | |
| S21 <i>Advances to public (net)</i> .. | 1 | 1 | 3 | 8 | 6 | 6 | 14 | 14 | 26 | | Residual (WP, Table XI less C21) |
| S22 <i>Capital transfers</i> | .. | .. | .. | .. | 1 | 1 | 1 | 1 | 1 | | WP, Table IX |
| S23 <i>Local & semi-govt. securities</i> .. | 21 | 37 | 66 | 60 | 71 | 65 | 63 | 55 | 66 | | WP, Table XI |
| S24 <i>Borrowing from C'wealth Bank</i> | — | 7 | 12 | — | — | — | — | — | — | (c) | { BS, 1950/1, p. 33; 1951/2, p. 3 |
| S25 <i>Sale of dwellings</i> | .. | .. | 1 | 1 | 1 | 1 | 1 | 6 | 16 | | WP, Table XI |

Notes to Table IV

For symbols and abbreviations used, see notes to Table III.

- (a) Columns may not add to totals owing to rounding.
- (b) The figures for State domestic raisings for 1948/49-1950/51 have not been published in any Commonwealth budget papers; they can be brought together from the public accounts of the States.
- (c) The discovery of the correct figures for State public loan raisings in Australia and for domestic and overseas redemptions in 1948/49, 1949/50 and 1950/51 required considerable detective work. The main cause of the trouble were two transactions involving redemption of a Victorian London loan in 1949/50 and a New South Wales London loan in 1950/51. Both transactions were financed partly by the National Debt Sinking Fund but mainly by the Commonwealth Bank which redeemed the securities from its own London funds and was given equivalent amounts in Commonwealth bonds in Australia. Both transactions are described in

sterling) in the Commonwealth Budget Speeches for 1950/51 and 1951/52, but the Commonwealth Bank's contributions were missed in the compilation of the White Paper because they were not published in the State loan fund accounts which are used as a source of information by the Statistician and which recorded the transactions on a net basis. In the 1952/53 Commonwealth *Budget*, the Commonwealth Bank's contribution of 1950/51 is correctly shown as a Loan Fund redemption, but the corresponding figure for the 1949/50 transaction, as far as can be ascertained, is too large by some £10 million, as is also the figure for State loan raisings for that year. Even allowing for the Commonwealth Bank transactions, the White Paper figures for net loan raisings in Australia and overseas for these three years reveal an unexplained discrepancy which has been included as Item S13b with "other funds available".

(d) See note (b) to Table III.

TABLE V
Loan Council Programme
 £,000

| | 1951/52 | 1952/53 | 1953/54 | 1954/55 | 1955/56 | 1956/57 | Key (Tables III and IV) | Sources |
|--|---------|---------|---------|---------|----------|-----------|--------------------------------------|--|
| I. <i>Loan Council Programme</i> | | | | | | | | |
| Loans obtained from Australian sources: | | | | | | | | |
| Public Loans | 63,824 | 52,009 | 118,172 | 122,388 | 93,433 | 97,672 | C5a+6+S5-C18-C4 | BS, 1956/7, p. 5 |
| State Domestic Raisings | 7,011 | 6,643 | 7,475 | 8,139 | 5,375 | 1,150 | -C15e-S15e S4 | do. do. do. |
| Total | 70,835 | 58,652 | 125,647 | 130,527 | 98,808 | 98,822 | | do. |
| Finance Arranged by C'wealth: | | | | | | | | |
| Loans Raised Overseas | 27,000 | 18,500 | 23,750 | 33,300 | 27,066 | (a)1,293 | | do. |
| Other Special C'wealth Assistance | 125,865 | 113,030 | 50,603 | 16,173 | 64,126 | 91,885 | | do. |
| Total | 152,865 | 131,530 | 74,353 | 49,473 | 91,192 | 93,178 | | do. |
| Grand Total (State Works & Housing Programme) | 223,700 | 190,182 | 200,000 | 180,000 | 190,000 | 192,000 | | do. |
| II. <i>Other Special Commonwealth Assistance</i> | | | | | | | | |
| Advance subscriptions | 372 | 2,880 | 5,613 | -4,681 | (b)3,112 | (b)-4,800 | C5c | BP, 1955/6, p. 89 (LF) |
| Transfers from C'wealth Revenue Fund | 98,500 | 13,400 | 56,271 | 70,151 | 61,613 | 111,612 | C1d | BP, 1956/7, p. 134 (Misc); BS, 1957/8, p. 2 |
| C'wealth domestic raisings | — | 15,000 | — | — | — | (c)2,699 | C4 | BP, 1955/6, p. 121 (Chr. L) |
| Net increase in Treasury bills (public) | 42,600 | 71,720 | 33,000 | -30,000 | 5,000 | -15,000 | 3 | BP, 1955/6, p. 89 (LF) |
| Increase in C'wealth Trust Fund balances (n.e.i.) | 667 | 10,262 | 32,383 | -15,871 | (b)6,990 | (b)7,416 | | residual |
| Less | — | — | — | — | — | — | | |
| Redemptions from Loan Fund (excl. redemptions from cash loan proceeds) | -5,950 | -331 | -189 | -71 | -21 | -12 | C15a+S15a+C14b -C15f-S15c C12a | BP, 1955/6, p. 6 (Tr. B) |
| Increase in C'wealth cash balances | -5,204 | 5,784 | -4,281 | 542 | -1,764 | -1,992 | | |
| Other C'wealth commitments: | | | | | | | | |
| War Service Land Settlement Advances to States | -5,120 | -5,685 | -4,199 | -4,039 | -7,622 | -8,018 | C19b | BP, 1955/6, p. 90 (LFE) |
| Emergency Wheat Storage | — | — | — | — | -3,182 | — | C21c | do. |
| Other Special Commonwealth Assistance | 125,865 | 113,030 | 50,603 | 16,173 | 64,126 | 91,885 | | Table V, I |

TABLE V—continued

| | 1951/52 | 1952/53 | 1953/54 | 1954/55 | 1955/56 | 1956/57 | Key (Tables III and IV) | Sources |
|--|------------|------------|------------|------------|------------|------------|----------------------------------|----------------------|
| III. Reconciliation with Commonwealth Capital Account Funds Available | | | | | | | | |
| Loan Council Programme | 224 | 190 | 200 | 180 | 190 | 192 | | Table V, I |
| Other C'wealth commitments | 5 | 6 | 4 | 4 | 11 | 8 | | do. |
| Balance of current surplus | 183 | 155 | 157 | 144 | 161 | 189 | C1—C1h | |
| Depreciation allowances | 3 | 2 | 3 | 2 | 3 | 4 | C2 | |
| Balance of Treasury bills (public) | 2 | — | — | — | — | — | 3—C3 | |
| Increase in stabilisation funds | -66 | -22 | -35 | -12 | — | — | C10 | |
| Other funds available | 2 | -3 | 5 | 1 | 6 | -3 | C13 | |
| Balance of overseas borrowing | -3 | -3 | -6 | -4 | — | -2 | | (d) |
| Less State loan raisings (excl. special loan) | -31 | -27 | -69 | -88 | -43 | -40 | S4+S5—S15—C18 | |
| Total Funds Available | 319 | 298 | 259 | 227 | 333 | 352 | | |
| Disposal | | | | | | | | |
| C'wealth public works | 74 | 69 | 66 | 68 | 78 | 82 | C17 | |
| Balance of debt redemption | 35 | 34 | 36 | 55 | 68 | 99 | { C15—C15a+S15— S15a+C14—C14b | |
| Increase in stocks | 6 | 1 | -7 | -1 | 3 | — | C11 | |
| C'wealth grants for capital purposes | 17 | 17 | 23 | 23 | 31 | 36 | C20 | |
| Capital transfers | 2 | 1 | 1 | 1 | 1 | 3 | C22 | |
| Net purchases of existing real assets | 1 | 3 | 1 | 1 | 1 | 1 | C9 | |
| Advances to public (net) | 24 | 23 | 20 | 22 | 27 | 25 | C21 | |
| Increase in Govt. bond holdings | 2 | -12 | -6 | -9 | -9 | -38 | C8 | |
| Balance of increase in cash balances | -27 | — | -27 | -2 | -6 | -1 | C12b | |
| Special loan | 160 | 123 | 80 | 48 | 93 | 99 | C18 | |
| Advances to States | 26 | 30 | 42 | 31 | 38 | 39 | C19 | |
| Rounding error | -2 | -1 | — | -1 | +1 | — | | |
| Increase in trust fund balances (n.e.i.) | 1 | 10 | 32 | -16 | 7 | 7 | | Table V, II residual |
| Total Disposal | 319 | 298 | 259 | 227 | 333 | 352 | | |

Notes

- (a) This amount represents loan raisings on behalf of the States in New York and was not technically part of finance arranged by the Commonwealth.
- (b) BS, 1956/7, p. 5, gives advance subscriptions as £2,019,000 for 1955/56; BS, 1957/8, p. 2, as £3,917,000 for 1956/57. In both cases, the figure is net of loan instalments outstanding which has been deducted from the residual increase in trust fund balances n.e.i. The amount for instalments outstanding is nowhere published; it is included in the item "balance of Loan Fund including outstanding instalments", BP, 1955/6, p. 92.
- (c) I.B.R.D. counterpart funds.
- (d) I.B.R.D. counterpart funds invested in public loans less reduction in I.B.R.D. trust fund balances for investment in special loan.

TABLE VI
Public Authorities—Finance of Public Investment
 £ million

| | 1948/9 | 49/50 | 50/1 | 51/2 | 52/3 | 53/4 | 54/5 | 55/6 | 56/7 | |
|----------------------------------|---|-------|------|------|------|------|------|------|------|-----|
| SOURCES OF FINANCE | | | | | | | | | | |
| A. Revenue | | | | | | | | | | |
| 1 | Current surplus | 144 | 135 | 247 | 331 | 243 | 299 | 302 | 297 | 391 |
| 2 | Depreciation allowances .. | 5 | 6 | 6 | 8 | 10 | 15 | 16 | 21 | 22 |
| | Total | 149 | 141 | 253 | 339 | 253 | 314 | 318 | 318 | 413 |
| B. Borrowing | | | | | | | | | | |
| I. From Australian Public | | | | | | | | | | |
| S4 | State domestic raisings .. | 3 | 3 | 9 | 7 | 7 | 8 | 8 | 6 | 1 |
| 5 | Loan raisings—Aust. .. | 150 | 140 | 149 | 241 | 189 | 203 | 171 | 196 | 192 |
| S23 | Local & semi-govt. securities .. | 21 | 37 | 66 | 60 | 71 | 65 | 63 | 55 | 66 |
| | Less | | | | | | | | | |
| | <i>Redemptions & Repurchases</i> | | | | | | | | | |
| 15 | C'wealth bonds—Aust. .. | -63 | -54 | -86 | -51 | -37 | -31 | -51 | -65 | -96 |
| 14 | Savings certificates .. | -2 | -7 | -7 | -6 | -8 | -5 | -4 | -3 | -4 |
| 8 | Increase in bonds held by | | | | | | | | | |
| C18 | public authorities .. | -22 | 1 | 12 | -158 | -110 | -92 | -59 | -89 | -61 |
| | Net loan raisings | 87 | 120 | 143 | 93 | 112 | 148 | 128 | 100 | 98 |
| C10 | Increase in stabilisation funds .. | 40 | 14 | 63 | -66 | -22 | -35 | -12 | — | — |
| | Less | | | | | | | | | |
| 21 | Advances to public (net) .. | -9 | -17 | -26 | -32 | -29 | -26 | -36 | -41 | -51 |
| | Total | 118 | 117 | 180 | -5 | 61 | 87 | 80 | 59 | 47 |
| II. From Overseas | | | | | | | | | | |
| 6 | International Bank (net) .. | — | — | 4 | 25 | 17 | 22 | 24 | 18 | 3 |
| 7, 16 | Other overseas loans (net) .. | -9 | -14 | -20 | -2 | -1 | -10 | — | 7 | 3 |
| | Total | -9 | -14 | -16 | 23 | 16 | 12 | 24 | 25 | 6 |
| III. From Central Bank | | | | | | | | | | |
| 3 | Treasury bills (public) .. | -85 | -15 | 2 | 43 | 72 | -35 | -30 | 5 | -15 |
| C4 | C'wealth domestic raisings .. | — | — | — | — | 15 | — | — | — | — |
| S24 | State borrowing from C'wealth Bank .. | — | 7 | 12 | — | — | — | — | — | — |
| | Total | -85 | -8 | 14 | 43 | 87 | -35 | -30 | 5 | -15 |
| C. Other Funds | | | | | | | | | | |
| 13 | Other funds available | 2 | 3 | 12 | 1 | 3 | 12 | 8 | 7 | 7 |
| 12 | Use of cash | -13 | -12 | -58 | 40 | -24 | -6 | 20 | 36 | -8 |
| S25 | Sale of dwellings | — | — | 1 | 1 | 1 | 1 | 1 | 6 | 16 |
| 22 | less Capital transfers | -6 | -3 | -62 | -2 | -2 | -2 | -2 | -2 | -4 |
| | Total | -17 | -12 | -107 | 40 | -22 | 5 | 27 | 47 | 11 |
| | <i>All Sources of Finance</i> .. | 156 | 224 | 324 | 440 | 395 | 383 | 419 | 454 | 462 |
| USE OF FINANCE | | | | | | | | | | |
| 17 | Public works | 142 | 198 | 288 | 393 | 385 | 397 | 416 | 439 | 455 |
| 9 | Net purchases of existing real assets | 6 | 6 | 17 | 6 | 5 | 5 | 4 | 5 | 3 |
| 11 | Increase in stocks | 8 | 20 | 19 | 41 | 5 | -19 | -1 | 10 | 4 |
| | | 156 | 224 | 324 | 440 | 395 | 383 | 419 | 454 | 462 |

TABLE VIII—Indirect Central Bank Finance

£ million

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Date | Source |
|--|--------|-------|-------|-------|-------|-------|-------|-------|-------|----------|---|
| I. BALANCE SHEET METHOD | | | | | | | | | | | |
| 1. Increase in C'wealth Bank holdings of govt. securities (incl. treasury bills) | -104.5 | 158.5 | 15.1 | 141.6 | 13.0 | -44.2 | 31.3 | 31.2 | -55.5 | 30/6 | C'wealth Bank, Annual Reports |
| 2. Less increase in treasury bills (public) outstanding | 85.0 | 15.0 | -2.4 | -42.6 | -71.7 | 35.0 | 30.0 | -5.0 | 15.0 | 30/6 av. | Table VI, 3 |
| 3. Add increase in trading bank treasury bill holdings | -8.0 | 15.7 | 46.2 | -14.8 | 79.4 | -58.6 | -39.4 | -3.3 | -10.3 | June | Finance Bulletin |
| 4. Increase in C'wealth Bank holdings of govt. securities | -27.5 | 189.2 | 58.9 | 74.2 | 21.7 | -67.8 | 21.9 | 22.9 | -50.8 | | Residual |
| 5. Less direct C'wealth Bank purchases of C'wealth bonds | — | -7.0 | -11.8 | — | -15.0 | — | — | — | — | 30/6 | Table VI, C4+S24 |
| 6. Indirect central bank finance .. | -27.5 | 182.2 | 47.1 | 74.2 | 6.7 | -67.8 | 21.9 | 22.9 | -50.8 | | Residual |
| II. DISTRIBUTION OF BOND HOLDINGS METHOD | | | | | | | | | | | |
| 1. C'wealth Bank & C'wealth Savings Bank increase in holdings of C'wealth bonds | -7.7 | 3.7 | 65.9 | 105.6 | 10.6 | -30.6 | 45.6 | 36.2 | -25.1 | 30/6 av. | C'wealth Bank, Statistical Bulletin (incl. General Banking Div. thro' 52/3), Finance Bulletin |
| 2. Less increase in holdings of General Banking Division | -22.0 | 4.6 | 13.6 | -5.9 | 6.9 | — | — | — | — | June | |
| 3. Less increase in C.S.B. holdings (incl. treasury bills) | -6.2 | -17.7 | -44.4 | 7.8 | -6.7 | -14.5 | -19.5 | 1.7 | 2.0 | 30/6 | |
| 4. Increase in C'wealth Bank holdings of C'wealth bonds | -35.9 | -9.4 | 35.1 | 107.5 | 10.8 | -29.9 | 26.1 | 37.9 | -23.1 | | Residual |
| 5. Less direct C'wealth Bank purchases of C'wealth bonds | — | -7.0 | -11.8 | — | -15.0 | — | — | — | — | | Table VI, C4+S24 |
| 6. Indirect central bank finance .. | -35.9 | -16.4 | 23.3 | 107.5 | -4.2 | -29.9 | 26.1 | 37.9 | -23.1 | | Residual |
| III. | | | | | | | | | | | |
| 1. Indirect central bank finance (incl. open market purchases) (estimated) | -32 | (83) | 35 | 91 | 1 | -49 | 24 | 30 | -37 | | Average of 16 and 116 above |
| 2. Net bond purchases by all other investors | 119 | (37) | 108 | 2 | 111 | 197 | 104 | 70 | 135 | | Residual |
| 3. Net loan raisings | 87 | 120 | 143 | 93 | 112 | 148 | 128 | 100 | 98 | | Table VI |

TABLE IX
Bank and Non-Bank Finance in Bond Market
 £ million

| | 1948/9 | 49/50 | 50/51 | 51/52 | 52/53 | 53/54 | 54/55 | 55/56 | 56/57 | Totals | | |
|--|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------|-------------------|-------------------|
| | | | | | | | | | | 1948/49 -50/51 | 1951/52 -56/57 | 1948/49 -56/57 |
| <i>Increase in Australian holdings of Commonwealth Government Securities</i> | | | | | | | | | | | | |
| C'wth Bank & C'wth Savings Bank(a) .. | -7.7 | 3.7 | 65.9 | 105.6 | 10.6 | -30.6 | 45.6 | 36.2 | -25.1 | 103.5 | 314.1 | 417.6 |
| All other banks .. | 7.6 | 32.4 | 1.6 | -27.9 | 46.5 | 51.6 | -0.5 | 15.6 | 86.5 | | | |
| Governmental bodies .. | 7.2 | 2.0 | -5.3 | 162.8 | 132.2 | 94.5 | 62.5 | 83.7 | 71.2 | 176.3 | 22.0 | 198.3 |
| All others .. | 86.9 | 68.0 | 21.4 | -46.0 | -17.6 | 63.4 | 20.5 | 7.9 | -6.2 | | | |
| Total .. | 94.0 | 106.1 | 83.6 | 194.5 | 171.7 | 178.9 | 128.1 | 143.4 | 126.4 | | | |

(a) Includes General Banking Division through 1952/53.

Source: Commonwealth Bank, *Statistical Bulletin*, October 1951, September 1953, October 1957.

NOTES

WOOL IN THE NEW ZEALAND ECONOMY—A COMMENT

In forecasting long-term trends where many of the variables must remain unknown, it is a sound principle to use broad approximations rather than methods which pretend to greater exactitude than the data permit. Dr. Philpott, however, in computing the possible demand for wool in 1975,¹ seems to have carried this principle farther than he need have done.

Assuming unaltered price relationships, he derives the increase in the demand for wool from two components: the increased number of wool consumers, represented by the projected rate of *world* population growth; and the increased ability of each consumer to buy wool textiles, represented by the rate of growth of *world* income per head adjusted by the income elasticity of demand for wool.²

The use of the projected rate of world population growth as an indicator of the increase in demand attributable solely to population changes is open to two objections.

In the first place, the world rate is influenced by countries in which no significant quantity of wool is consumed at all. If the rate of population growth in the wool-consuming countries differs significantly from that in the rest of the world, the use of the world rate may be seriously misleading. The table below suggests that the anticipated rate of population growth in the conventionally designated "wool-consuming countries" is 1.05 per cent. If, to widen the population coverage, one includes countries where the consumption of wool per head is much lower (China, India, Peru, etc.) the anticipated rate of growth for the whole of the contemporary "wool-consuming world" is 1.3 per cent.³

In the second place, consumption of wool per head varies widely from country to country. For this reason it is not safe to base a projection of the growth of demand for wool on the *average* rate of population growth, even that of the "wool-consuming countries". This difficulty can be overcome by projecting each country's consumption in some base period by that country's anticipated population growth. The table below suggests that accounting only for the population growth factor—that is, assuming constant real income per head, tastes and price relationships—consumption of wool in the present, broadly defined, "wool-consuming world" will by 1975 have risen to

1. B. P. Philpott, "Wool in the New Zealand Economy", *Economic Record*, XXXIII, 65 (August, 1957), pp. 216-231.

2. *Ibid.*, p. 222.

3. The principle of separating out those parts of the world directly relevant to the wool market is accepted by Dr. Philpott at an early stage of the argument (p. 219, note 5), but is subsequently ignored.

*Projected demand for wool in 1975, assuming constant tastes
and relative prices*

| Region | Wool Consumption per Head, 1948-52 | Projected rate of population Increase (a) | Annual Average Wool Consumption, 1948-52 (b) | Wool Consumption, 1975 |
|---|---|---|--|--|
| WESTERN EUROPE: Austria, Belgium, Denmark, Finland, France, Greenland, Italy, Ireland, Holland, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, West Germany, Yugoslavia | lb. 3·99 | % 0·6 | mn. lb. 1159 | clean 1359 |
| "NORTH AMERICA": Australasia, Canada, Union of South Africa, United States of America | 3·52 | 1·1 | 677 | 896 |
| TEMPERATE SOUTH AMERICA: Argentine, Chile, Paraguay, Uruguay | 3·70 | 1·5 | 99 | 140 |
| JAPAN | 1·08 | 1·5 | 90 (c) | 127 |
| "SOVIETS": Bulgaria, Czecho- slovakia, East Germany, Hungary, Poland, Roumania, U.S.S.R. (in- cluding Asiatic) | 0·94 | 1·2 | 283 | 381 |
| CONVENTIONAL "WOOL-CON- SUMING COUNTRIES" | 2·58 | 1·05 | 2308 | 2903 rate of increase in consumption = 0·95% |
| CENTRAL-SOUTH AND SOUTH- WEST ASIA: India, Iraq, Israel, Jordan, Lebanon, Pakistan, Persia, Saudi Arabia, Syria, Turkey .. | 0·17 | 1·5 | 86 | 125 |
| CHINA | 0·06 | 1·0 | 33 | 42 |
| TROPICAL SOUTH AND CEN- TRAL AMERICA: Bolivia, Brazil, Columbia, Ecuador, Mexico, Peru, Venezuela | 0·44 | 2·4 | 48 | 86 |
| NORTH AFRICA: Algeria, Egypt, French West Africa, Libya, Morocco, Tunisia | 0·58 | 1·7 | 25 | 38 |
| TOTAL "WOOL-CONSUMING WORLD" | — | 1·3 | 2500 | 3194 rate of increase in consumption = 1·0% |

Notes: (a) Source: United Nations Population Division, *Framework for future population estimates, 1950-1980, by world regions* (E/CONF.13/126), 1954, Table II, "middle assumption".

(b) Source: Commonwealth Economic Committee, *World Consumption of Wool 1950-1953*, Appendix IV.

(c) As Japanese consumption has only just returned to what might be called a "normal" level, the figure in the table has been substituted for the actual average of 73mn. lb.

3,194 mn. lb., an annual increase of 1.0 per cent,⁴ 0.5 per cent less than Dr. Philpott's assumed rate of 1.5 per cent.⁵

The other component in the derivation of the increase in the demand for wool is the increase in real income per head adjusted by the income elasticity of demand. Accepting Dr. Philpott's assumption of a 2 per cent increase in real income and an income elasticity of demand of 0.85, the suggested modification of the population factor would mean that the rate of growth in the demand for wool would be only 2.7 per cent instead of his 3.2 per cent. This would mean that the gap between the rates of growth of the demand for and supply of wool (excluding wool-type synthetics) would be narrowed from 1.2 per cent to 0.7 per cent.⁶ This alone must dampen the optimism of the forecast.

Moreover, as Dr. Philpott would agree, an accurate estimate of the income component would be extremely difficult. For the conventionally designated "wool-consuming countries" it may be fairly reasonable to base an estimate on the assumption of a stable rate of growth of real income per head. But to assume that we can infer the likely growth of real income per head, or the income elasticity of demand for wool, in India, China, Indonesia or the Arab states from the experiences of Western Europe or North America is unsafe, to say the least. So long as a margin of 1.2 per cent separated the rates of growth of demand and supply it could be assumed fairly confidently that errors in estimation would not invalidate the general tenor of the conclusions. The reduction of that margin to 0.7 per cent means that they are much more vulnerable to criticism of the income component in the exercise.

A. BARNARD

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4. It must be emphasized that this estimate of 1.0 per cent is based on imperfect materials. The wool consumption figures used in the table to weight the population figures do not refer to the consumption of manufactured textiles by final users but to the consumption of raw and semi-processed wool in manufacturing mills; adjustment to allow for the effects of international trade in manufactured wool textiles would therefore provide a better measure of consumption per head in individual countries and improve the estimate. The population projections were made some years ago and might be revised. While such revisions might be striking in the case of individual countries, they would have a less marked effect on groups of countries. It was, partly, for this reason that the countries have been grouped within the table. Some of the grouping, however, is awkward and it reintroduces, though in a reasonably innocuous form, the problem of differing levels of consumption per head. The inclusion of India, China and similar countries in the "wool-consuming world" is open to criticism, though in fact it acts to increase the rate of growth of demand.

5. Philpott, *op. cit.*, p. 222.

6. The rate of growth of supply (p. 223) is estimated at 2.0 per cent, of demand (p. 222) 3.2 per cent.

REPLY

When writing this article I was not unmindful of the points raised by Mr. Barnard. His criticism is quite justified, but it is somewhat reduced in force if account is taken of two factors which should perhaps have been mentioned in my article.

- (i) The first point (and Mr. Barnard mentions this himself) is that the population figures for each country should be weighted, not by the mill consumption of wool, but by the final consumption of wool textiles in each country. Because most of the countries with high rates of population increase are also net importers of wool textiles, weighting in this way has the effect of raising the prospective average rate of increase in world wool consumption to about 1·2 per cent per annum compared with my 1·5 per cent and Mr. Barnard's 1·0 per cent.
- (ii) Of much greater significance, however, is the strong possibility that those countries which are experiencing rapid population growth are also the countries which, because they are poor, have income elasticities for wool textiles much higher than the figure of 0·85, which was used in my article, and which is applicable to the important westernized wool-consuming countries. Admittedly there is little available data with which to substantiate this suggestion but it is certainly not refuted by the very substantial increases, in recent years, in per capita wool consumption for such developing countries as Japan, U.S.S.R., China, Malaya, Turkey, Syria, Iraq and Algeria.

Assuming an income elasticity of 1·5 for Mr. Barnard's second group of countries, and of 0·85 for the first group, then a calculation using separate income elasticities for the two groups (and taking account of the first consideration mentioned above) results in a prospective compound rate of increase in world demand of about 3 per cent—much the same as the figure I originally suggested.

My aim in writing the article was not so much to make forecasts of wool prices—whether optimistic or pessimistic—but simply to explore the dimensions of the problem and above all to suggest that all the available evidence supports a vigorous policy of expansion in wool production. I do not think this conclusion is in any way impaired by Mr. Barnard's very useful criticism.

In any case, a policy of rapid expansion in wool production is now more than ever necessary to make up for the effects of the Australian drought on the level of Australian wool production.

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NEWS AND NOTES

The *Australian Journal of Statistics* is to be published three times a year by the Council of the Statistical Society of New South Wales. Papers should be submitted to either Dr. H. S. Konijn or Dr. H. O. Lancaster, at the University of Sydney, Sydney, New South Wales.

The Thirty-fourth Congress of the Australian & New Zealand Association for the Advancement of Science is to be held in Perth from 24th to 28th August, 1959. The President of Section G will be Professor P. H. Karmel. Offers of papers should be sent by 31st March, 1959, to Mr. D. W. Oxnam (Faculty of Economics, University of Western Australia), the honorary local secretary of Section G. The papers themselves, which should be as short as possible and in any case should not exceed 5,000 words, should be submitted not later than 1st June, 1959.

At the Thirty-third Congress of the Australian & New Zealand Association for the Advancement of Science, held in Adelaide from 20th to 27th August, 1958, the following papers were presented to Section G (Economics, Statistics and Social Science) :

“The Varied Role of Central Banks” (Presidential Address by A. R. Low); “The Changing Role of Trading Banks” (D. H. Merry); “Some Aspects of Personal Saving” (Dr. H. Bell); “Recent Trends in Australian Employment” (H. P. Brown); “Trends in Women’s Work Participation” (C. E. V. Leser); “Basic Economic Policy for Australia” (Professor Sir Douglas Copland); “Can We Offset Our External Difficulties? A Neglected Australian Problem” (G. R. Mountain); “Income Estimates for an Australian State” (Dr. A. M. Kerr); “The Teaching of Elementary Mathematics to University Students of Economics” (Professor R. S. G. Rutherford); “The Changing Structure and Direction of Australian Trade” (G. Warwick Smith); “Balance of Payments Trends” (R. F. Jones); “Tariff and Import Licensing Policies” (Dr. M. Corden); “Some Recent Suggestions for Improving the Sterling Area” (Dr. J. O. N. Perkins); “Some Remarks on Regression Analysis with Uncontrolled Regressors” (Dr. H. S. Konijn); “Federal Finance in British Commonwealth Countries” (Professor W. Prest); “The Role of Income and Investment in the Aggregate Supply of Farm Products in New Zealand” (B. P. Philpott and J. D. Stewart); “Linear Programming as an Aid to Economic Analysis” (W. Candler); “Aerial Pasture Improvements in N.S.W.” (F. Gruen); “The A.N.Z. Bank’s Index of Australian Industrial Production” (M. E. Joseph); “Productivity of Labour: Certain Measures Used in Modern Industry and their Economic Significance” (Dr. K. A.

Blakey); "Growth and the Capital Stock" (*Dr. W. E. G. Salter*); "Generation Life-Tables in Australia" (*Dr. H. O. Lancaster*); "The Agricultural Provisions of the European Economic Community Treaty" (*P. D. Abbott*); and "Forecasting the Market for Consumer Durables in Australia" (*Dr. H. Hughes*).

During the Conference, Professor Sir Douglas Copland delivered the first Giblin Memorial Lecture, "L. F. Giblin and the Frontier of Research on the Australian Economy". The Australian Society of Accountants Lecture, "The Province of Accounting", was given by Professor L. Goldberg.

Social functions included a sherry party given by the South Australian Branch of the Economic Society of Australia and New Zealand; a tour of the new town of Elizabeth as guests of the South Australian Housing Trust (conducted by Mr. A. M. Ramsay, General Manager of the Trust); and a visit to the McLaren Vale winery of Thomas Hardy and Sons, who later were hosts to the Section at a picnic luncheon in the cellars. Section members were described collectively by Dr. Perkins as "a gaggle of gees".

The President of the Section for the Adelaide Meeting was Mr. A. R. Low, Economic Adviser to the Reserve Bank of New Zealand; and the Secretary was Professor R. L. Mathews, Professor of Commerce in the University of Adelaide.

The Central Council of the Economic Society of Australia and New Zealand held its meeting in Adelaide during the A.N.Z.A.A.S. Congress. The Council elected Professor S. J. Butlin as President in succession to Professor H. W. Arndt. Mr. G. S. Colman was elected to the Editorial Board to succeed the late Sir Lennon Raws. The Council also elected Professor Sir Douglas Copland, Professor F. R. E. Mauldon, Professor T. Hytten and Professor A. H. Tocker as Honorary Life Members of the Society. It was reported that the International Economic Association had accepted the Economic Society into its membership.

LIST OF BRANCH SECRETARIES

New South Wales: J. R. Wilson, c/o Department of Economics, University of Sydney, Sydney, N.S.W.

Victoria: D. M. Hocking, Department of Economics, University of Melbourne, Carlton, N.3, Victoria.

Queensland: A. J. Reitsma, Department of Economics, University of Queensland, St. Lucia, Brisbane, S.W.6, Queensland.

South Australia: D. Simmons, Department of Economics, The University, Box 498D, G.P.O., Adelaide, South Australia.

Western Australia: W. R. Rogers, 25 Hobbs Avenue, Dalkeith, Western Australia.

Tasmania: D. E. Kirby, Box 665E, G.P.O., Hobart, Tasmania.

Canberra: W. E. G. Salter, Department of Economics, Australian National University, Canberra, A.C.T.

Wellington: I. F. E. Wilson, c/o Bowden, Bass & Cox, Public Accountants, 328-330 Lambton Quay, Wellington, New Zealand.

Auckland: A. D. Brownlie, Economics Department, University College, P.O. Box 2553, Auckland, New Zealand.

Christchurch: N. L. McBeth, c/o "Press", The Square, Christchurch, New Zealand.

Dunedin: W. A. Poole, University of Otago, Union Street, Dunedin, New Zealand.

THE INDIAN ECONOMIC REVIEW

No. 1

FEBRUARY 1958

Vol. IV

The Biannual Journal of
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THE SOUTH AFRICAN JOURNAL OF ECONOMICS

Vol. 26, No. 3 - - September 1958

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REVIEWS

Fifty Years of Farm Management. By H. C. M. CASE AND D. B. WILLIAMS. (University of Illinois Press, Urbana, 1957.) Pp. 386. 61/9 Aust.

In 1948, D. B. Williams, now Officer-in-Charge of the Agricultural Research Liaison Section of the C.S.I.R.O. in Melbourne, went to the University of Illinois as a Thomas Lawrance Pawlett Scholar from the University of Sydney. There, under Professor Case's guidance, he prepared a dissertation on the evolution of farm management methods in the United States, which subsequently received one of the awards of the American Farm Economics Association. This book, the preliminary manuscript for which was prepared prior to Williams' return to Australia in 1951 and has been "revised and completed as opportunity has arisen since then", develops and expands the ideas presented in the original thesis.

In Australia at the present time, there is growing recognition of the importance of farm management economics in the fields of both research and extension. State and Commonwealth instrumentalities have come to appreciate the importance of including farm management advice in their extension services, and farmers are asking more and more for this type of advice.

The application of economic methods to agriculture is a relatively new field in Australia and we can learn much from the experience of other countries, particularly the United States.

In the introduction to this book, the authors set themselves to "describe the advances made in the research, teaching and extension aspects of farm management in the United States and endeavour to interpret and evaluate developments that have occurred". In both these tasks they have succeeded admirably.

The book is divided chronologically into five divisions, each covering a decade, and begins its study at the turn of the century with the classical cost analyses at Minnesota, the survey method of collecting data developed at Cornell and the "model farm" approach of Spillman. The decade 1910-20, when farm management emerged as a study in its own right completely separate from agronomy and an equal partner with the macro-economic study of agriculture, is treated at some length. The development of farm account books, the gradual evaluation of farm budgeting and the swing to a "whole farm" approach to management problems are all examined and analysed.

One feature of the development of farm management in the United States which could well be emulated in this country has been the close association of research and extension work under the Federal-State Co-operative Extension Service. The authors describe the development of this Service and discuss the impact it has had on the formulation of farm management ideas. They also discuss in detail the part played by

Government agencies, Universities and other institutions in farm management research and in the practical application of research results.

For any student or practitioner of farm management this book is essential reading, and is an excellent companion volume to Taylor's *The Story of Agricultural Economics*. The authors' treatment of the various facets of farm management makes it easy for Australian readers to draw parallels with experience in this country. One particular passage in the concluding chapter has a special significance here at the present time.

"Now, we look toward a renewed and increased attention to research. By closer co-operation with agricultural technologists, experiments can be planned to include information on economic aspects of the problems surveyed. In collaboration with psychologists and sociologists, we may explore the problems presented in personal characteristics and experiences of farmers and how these affect their decision-making and managerial abilities. Such clarifying knowledge and understanding of motivating forces can be valuable in estimating the probable outcomes of proposed new policies, and in evolving extension work of greater effectiveness for the farmer."

M. J. PHILLIPS

Sydney.

Principles of Economic Policy. By KENNETH E. BOULDING. (Prentice-Hall, New York, 1958.) Pp. vi + 440. \$7.95.

In style, in the choice of the apt word, in the range of interest displayed, this book lives up to what we have come to expect of Professor Boulding. One innovation here, however, is the author's own eight-line verses which head each chapter. While one may suspect some of the rhymes (or is this merely because we don't speak with an American accent?) these verses each provide an apt and illuminating text for a university lecture.

After discussing the nature of economic policy (in which welfare is the ultimate end) Boulding in successive chapters discusses the immediate objectives of economic policy—progress; stabilization; justice; freedom—, following with a chapter discussing the conflicts that may arise between these objectives. He then examines these objectives in terms of general policies, the successive chapter headings being: the principles of action applied to government; fiscal policy; monetary and financial policy; income maintenance policy; commercial policy and international economics; government and business enterprise. Three more specialized chapters follow in which Boulding discusses agricultural policy, labour policy, and the economics of war and peace. He concludes with two forward looking chapters: the world perspective (communism and development); and to Utopia and beyond.

The most interesting and stimulating chapters are those which deal with the four objectives of policy and the conflicts that may arise between them.

But as a whole the book is disappointing and occasionally trivial for so eminent an economist as Professor Boulding. Perhaps this is because Boulding is never quite certain for what audience he is writing the book. He does, indeed, in his preface write that "both the general reader and the student will find this an introduction to the principles of economics rather than its techniques". Yet both the general reader and the beginner in economics will often find the argument in the central chapters difficult to follow for Boulding leaves many statements unexplained. On the other hand the teacher or the graduate student will find little that is new.

Probably the book is best adapted to the good student in his third or so year who has progressed some distance in the study of economics for it will give him an overall view of economics as well as an appreciation of some of the conflicts that arise in policy making. This reviewer will also be glad to have the book on his shelves for it does provide an easy reference to the points he should develop in any lectures on policy.

JAMES P. BELSHAW

The University of New England.

Economic Development: Theory, History, Policy. By G. M. MEIER AND R. E. BALDWIN. (John Wiley & Sons, New York, 1957.) Pp. xix + 558. \$8.50.

In 1957, Economic Development graduated as a branch of economic theory for teaching purposes, the diploma consisting in the publication of the first spate of textbooks. Of the ten or so textbooks on the subject published last year, the book under review is the most comprehensive and, for those teachers who like the American type of "textbook for the course", undoubtedly the best.

Professors Meier and Baldwin manage in something over 500 pages to cover the whole range of the new subject, and their lay-out is conventional and logical. Part 1 surveys Theories of Economic Development; Part 3 covers the problems of under-developed countries under the sensible heading Accelerating Development in Poor Countries; Part 4 deals with the tasks of Maintaining Development in Rich Countries. The only unexpected feature is Part 2 which "to allow perspective and furnish a proving ground for the preceding theoretical discussion . . . examines the historical role of Britain as the 'centre' of the nineteenth century world economy". The idea on the whole comes off because the authors use this part to give far more than a mere historical account of British nineteenth-century economic development, indeed to smuggle in much basic theory of international trade and payments and growth as a background to the policy problems of Parts 3 and 4.

Part 1 follows the by now almost orthodox pattern of potted history of growth theories, the Classics, Marx, Schumpeter, Domar-Harrod and stagnation, varied only to include a useful chapter on Marshall and the lesser Neo-Classics. As usual, Wicksell gets much

less than his due, but generally this part is extremely well done. Students will benefit from the fact that the accounts of the various theories are much more faithful to the original texts than some recent more stylized versions.

In Parts 3 and 4 the attempt to cover so vast a field inevitably involves skimming here and generalizing rather sweepingly there. But the authors have been remarkably successful in linking theoretical analysis with discussion of practical problems and have gone out of their way to guide students, in footnotes, to samples of the vast literature of periodical articles and official reports. Oddly, there is no bibliography of the central themes of the book, but three good select bibliographies on socio-cultural aspects of development, specific development plans in various under-developed countries, and historical (country) case studies of economic development.

H. W. ARNDT

Canberra University College.

The Elements of Accounting. By L. GOLDBERG AND V. R. HILL. (Second edition, Melbourne University Press, Carlton, Victoria, 1958.) Pp. 300. 25/- net Aust.

In the second edition this elementary accounting text has been revised and, in places, re-written. It is interesting and thoughtful, departs from the conventional approach, and, as the authors say, was considered "somewhat revolutionary" when first published in 1947.

Various accounting concepts are discussed in the first part of the book, and the study of accounting method is commenced (in Chapter 7) from an analysis of the balance sheet (a final accounting report). The twofold effect of transactions is examined and the analysis is carried back through the mechanism of the ledger to the journal—the book of first entry. The later parts of the text are nearer the usual approach, and proceed in more detail through the journals, ledger and trial balance to the final reports.

Whilst the reviewer would not agree completely with all the techniques presented, the many reprints through which the first edition has passed indicate, as the authors claim, the sympathy of an increasing number of teachers with the "logical" form of presentation.

As an introductory text, the book is recommended to students of Universities, Technical Colleges, and professional accountancy organizations, and to those wishing to make acquaintance for the first time with the subject of accountancy.

W. L. BURKE

N.S.W. University of Technology.

The Economics of International Migration. Edited by BRINLEY THOMAS. (Macmillan, London, 1958.) Pp. xiii + 502. 64/9 Aust.

This book—a collection of papers delivered at a conference held by the International Economic Association in September 1955 and a record of the discussion on them—is disappointing. Its weaknesses

appear to be a more or less inevitable outcome of its origin and make it seem doubtful whether the publication of the proceedings of conferences such as this are justified. On the one hand the theoretical papers while providing useful surveys of the relevant literature attempt to be too comprehensive and merely raise a large number of issues without following them through properly. On the other hand the descriptive papers, while bringing together in one place a good deal of useful information about the facts of international migrations are too short to give a satisfactory description of the events with which they are concerned. One is left with the impression that one individual attempting to cover the field indicated by the title on the same scale as is indicated by the number of pages in this book would have produced a much more satisfying volume.

The particular objection to this work is that the title is somewhat misleading. It is both too wide and too narrow. Too wide in that it is primarily concerned with the nature and character of post World War II international migrations, the historical surveys included in a number of the articles merely providing a background to the problems of the post-war period. Too narrow in that it is concerned with much more than the economics of such migrations. For the period with which it is concerned this is, no doubt, quite proper. No account of this period could make sense without an appropriate weighting for political and "socio-psychological" factors. One cannot help feeling, however, that a return to the older title "political economy" would have better prepared the reader for the nature of the contents of this book than the title which has been adopted.

The technical apparatus of the book—foot-notes, index, etc.—is what one would expect from its publishers, but, if one can grant that it was in fact worth publishing, the delay in doing so seems to have been inordinately long.

A. R. HALL

Australian National University.

Public Principles of Public Debt. By JAMES M. BUCHANAN. (Richard D. Irwin, Inc., Homewood, Illinois, 1958.) Pp. xi + 223. \$5.00.

This book attempts to prove that—

- “1. The primary real burden of a public debt is shifted to future generations.
2. The analogy between public debt and private debt is fundamentally correct.
3. The external debt and the internal debt are fundamentally equivalent.”

These “allegedly vulgar and unsophisticated” ideas, which are found in “classical public debt theory”, are the reverse of those now accepted by most economists.

Professor Buchanan’s rejection of what he calls “the new orthodoxy” springs partly from his individualistic philosophy. He refuses

to have any truck with the organic view of the state; there can be no debt burden until individuals have to pay taxes to service the debt.

More important are his methodological criticisms, which perform a valuable function of amending and clarifying current public debt theory. This theory is accused of two main methodological errors. First, it often makes improper use of the *ceteris paribus* assumption, comparing a situation with debt and a situation without debt on the assumption that national income, tax revenue, government expenditure, and the stock of money are the same in both cases, when in fact these variables could not all be the same. Secondly, it often attributes to debt issue the effects of the combined debt-expenditure operation; if this is done "the availability of other, and possibly preferred, alternatives to either half will tend to be overlooked".

Space does not permit any account of the wide range of theoretical cases covered and the interesting discussion of public debt policy. Perhaps the book has an unnecessarily polemical flavour, but the analytical argument is of a high standard throughout.

W. R. LANE

University of Queensland.

The Development of the Soviet Budgetary System. By R. W. DAVIES.
(Cambridge University Press, 1958.) Pp. xxi + 373. 45/- stg.

This is a scholarly and well documented study which will undoubtedly become a standard authority on the working of the Soviet budgetary system. The book is not only concerned with budget procedures, but analyses the part played by the budget in the execution of the government's overall economic policy. As such it is likely to be of particular interest to economists and others who are currently concerned with problems of financing capital investment in an underdeveloped economy. In an interesting schematic section the author suggests that there are two possible systems which the government could have used in financing its investment: (1) fixing transfer prices of goods sufficiently above their costs to enable the investment of each industry to be financed from its own accumulated profits; (2) equating transfer prices with costs, imposing a turnover tax, and using the proceeds of the tax to finance investment through the budget. Both systems were used in varying degrees in pre-war Russia, but much greater reliance was placed on the second than on the first.

The author distinguishes three periods in the development of the Soviet Budgetary System: (i) the civil war of 1918-20 with its breakdown of the monetary system and the attempt to establish a "budget in kind"; (ii) the mixed economy of the New Economic Policy (1921-29) when there was a return to a budgetary system more in line with the pre-revolutionary pattern; (iii) the period of the fully planned economy (1930-41) with its emphasis on a new budgetary system designed to facilitate rapid industrialization.

In the final chapter he examines, in the light of war-time and post-war experience, the effectiveness of the budgetary system that had emerged by 1941.

RUSSELL MATHEWS

University of Adelaide.

Problems of the New Commonwealth. By SIR IVOR JENNINGS, K.B.E., Q.C. (Duke University Press, Durham, N.C., Cambridge University Press, London, 1958.) Pp. xi + 114. \$2.50.

This little book comprises three lectures delivered at the Duke University Commonwealth-Studies Center, and it deserves to be read by every Australian as well as every American student of Asian affairs. The first lecture is devoted to Political Considerations, the second to Economic Considerations and the third to Nationalism and Racialism.

Himself an authority on constitutional law and political science, Sir Ivor is an exceptionally well-qualified observer. He lived and worked in Ceylon for many years, and he has actually participated in framing the constitutions of several of the newly independent countries. His comments are always shrewd, often amusing and occasionally biting. He cuts through the emotional smog which surrounds such words as "nationalism", "colonialism" and "neutralism" and penetrates to the underlying realities.

Among the topics which he illumines are: the motivation of the English-speaking politicians to whom power has been transferred; the cleavage between them and the illiterate masses which look to them for leadership; and the unbelievably low general standard of mechanical knowledge and skill. Economists will be particularly interested in the bearing of the latter on the general problems of economic development, central planning and overseas trade which Sir Ivor discusses in his second lecture.

W. PREST

University of Melbourne.

The Agricultural Register (New Series). Changes in the Economic Pattern 1956-7. (Prepared by the Agricultural Economics Research Institute, University of Oxford, 1957.) Pp. 228. 21/- stg.

This volume represents a very welcome revival of a series prepared by the A.E.R.I. in the 1930's. It records "action taken concerning policy, guaranteed prices, finance, subsidies, marketing, etc., by Government Departments, Marketing Boards, banks, trade associations and other organizations".

To the Australian economist, this is important in two ways. The volume provides a very readable, but nevertheless apparently comprehensive statement of the marketing arrangements in the United Kingdom for primary products which is very relevant in any discussion of the future of much of our export markets. Secondly, this clear exposition of the U.K. marketing and farm support systems will be of value

in any reconsideration of Australian systems, e.g. in relation to the Dairy Industry.

R. S. G. RUTHERFORD

University of Sydney.

Economic Models—An Exposition. By E. F. BEACH. (John Wiley & Sons, New York, 1957.) Pp. 227. \$7.50.

This book attempts to present "the mathematical and statistical aspects that play an essential part in economic theory". Though one would never guess it from the title, it is then another attempt to produce a "Mathematics and Statistics for Economists". The author states that he is aware of the fact that his earlier chapters are very simple and that the level of mathematical sophistication rises rapidly. Readers are urged to try themselves out on the book, and if they find something difficult to skip a few pages and plunge into a later chapter.

In the event the book is a curious mixture. Some topics appear unduly laboured, even for Australian students, others involve an advanced level of sophistication in economic theory. Yet others give a nonchalant treatment of matters that are mathematically and statistically quite complicated: this must produce in the student a false belief that he really understands them that is positively dangerous.

R. S. G. RUTHERFORD

University of Sydney.

The National Economic Accounts of the United States—Review, Appraisal and Recommendations. A Report by the National Accounts Review Committee of the National Bureau of Economic Research. (United States Government Printing Office, Washington, 1958.) Pp. 202. 65 cents. (Not printed at Government expense.)

It is recorded in its 38th annual report that the National Bureau of Economic Research Inc. established a committee towards the end of 1956 to review and appraise the (U.S.) national economic accounts. This was done at the request of the Division of Statistical Standards of the Bureau of the Budget in the U.S. Just under a year afterwards, hearing on the report were held by the Sub-Committee on Economic Statistics of the Joint Economic Committee, 85th U.S. Congress; the record of the hearings was then published and this volume is a reprint of the National Bureau committee's report taken from that record.

It is worth noting that the National Bureau's committee was at some pains to give substance to its claims; that by interview and questionnaire it sought to discover the experience and needs of users of national economic accounts. It is worth noting, also, that the committee adopted a definite point of view itself about the desirability of extending and developing national economic accounts—that there could be no question of the usefulness of pushing measurement of this kind to the farthest lengths to which it could be carried.

To its credit, the committee's report was quite frank on this score, but some reference to the real as well as the monetary cost should have been useful—and appropriate from economists—although it was not

forthcoming. However, too much elaboration of any particular point was avoided on the grounds that the report was not a treatise on the subject of national accounting. This applies as much to the discussion of conceptual as to administrative problems.

A great deal is taken for granted. The report is more an outline of existing material with specific and categorical recommendations for its improvement and extension than a discussion of national accounting problems. For the latter—at least as far as they concern the usual income and product accounts—it is fortunate that reference can be made to volume 22 of the Bureau's Studies in Income and Wealth published in July 1958 under the title *A Critique of the United States Income and Product Accounts*.

Yet the usefulness and importance of the report should not be minimized. In its own words: "The committee has tried to provide in this report a road-map for national accounting during the next 5 to 10 years, rather than to conduct an item-by-item audit of the present estimates". This has mainly taken the form of suggestions for the integration of the five different forms of national economic accounting which—more than elsewhere—have tended to develop independently in the U.S.; the usual income and product accounts, input-output tables, money-flows studies, balance of payments statements and national balance sheets. One of the major benefits accruing from the first introduction of income and product accounts was the comprehensive and uniform view given of the economy; it would be a serious loss if the development of new forms of national accounting were allowed to confuse the overall picture once more.

In other respects, the committee's recommendations mostly called for improvement in or additions to the stock of primary statistics with which the national accountant must work.

Our needs in Australia seem to be much the same, in principle at least, as those in the U.S. We, too, need improved basic data, a finer sector division of the accounts, more frequent estimates and estimates in constant prices. But, and naturally enough, there should be some differences in emphasis. For instance, the need for a finer sector division is surely more urgent with us, for the U.S. farm sector is not subject to the same seasonal variations or random fluctuations in its fortunes as ours; nor does it have the same importance for the rest of the economy. A statistical separation of the farm sector should rank very high in any list of priorities for us. Integration of the accounts, on the other hand, is a far less pressing problem here, if only because so much less has of necessity been done as yet. But it would be a loss if the counsel offered were not taken from the start in any extension of Australian national accounting.

Such developments—whether in the U.S. or Australia—must, however, remain dreams until the holders of the purse strings can be shown that they are both necessary and urgently necessary; and it must be said that the committee's report is a lucid and persuasive attempt.

R. H. SCOTT

Sydney.

BOOKS RECEIVED*

A.—AUSTRALIAN AND NEW ZEALAND PUBLICATIONS

- BARNARD, A. *The Australian Wool Market 1840-1900*. (Melbourne University Press on behalf of the Australian National University, 1958.) Pp. 238. 35/- Aust.
- BEST, R. J. (ed.). *Introducing South Australia*. (Melbourne University Press, Carlton, Victoria, 1958.) Pp. 360. 37/6 Aust.
- MELLOR, D. P. *The Role of Science and Industry*. (Australia in the War of 1939-1945, Series 4, Volume V.) (Canberra, Australian War Memorial; Angus & Robertson Ltd., Sydney, 1958.) Pp. 738. 30/- Aust.
- WEBB, LEICESTER C. (ed.). *Legal Personality and Political Pluralism*. (Melbourne University Press on behalf of the Australian National University, 1958.) Pp. 200. 30/- Aust.

B.—OTHER PUBLICATIONS

- AGRICULTURAL ECONOMICS RESEARCH INSTITUTE. *The Agricultural Register (New Series). Changes in the Economic Pattern 1956-7*. (University of Oxford, Agricultural Economics Research Institute, 1957.) Pp. 234. 21/- stg.
- BOULDING, KENNETH E. *Principles of Economic Policy*. (Prentice-Hall, New York, 1958.) Pp. 440. \$7.95.
- BUCHANAN, J. M. *Public Principles of Public Debt*. (Richard D. Irwin, Inc., Homewood, Illinois, 1958.) Pp. 223. \$5.00.
- CARTER, C. F., MEREDITH, G. P., and SHACKLE, G. L. S. (eds.). *Uncertainty and Business Decisions*. 2nd ed. (Liverpool University Press, 1957.) Pp. 158. 22/6 stg.

This book is the second and enlarged edition of a report of part of the proceedings of the Economic Section of the British Association for the Advancement of Science 1953. Its theme is the logic, philosophy and psychology of business decision-making under uncertainty, with special reference to the concept of potential surprise developed by Professor G. L. S. Shackle. The ten contributors include economists, statisticians, philosophers and a psychologist and the whole provides a comprehensive survey of the subject as it now stands.

- CHACKO, K. C. *The Monetary and Fiscal Policy of India*. (Vora & Co. Publishers Private Ltd., Bombay, 1957.) Pp. 386. Rs. 12.50.

In this book, based on his doctoral dissertation for New York University, the author outlines Indian monetary and fiscal experience since 1939 with the main emphasis on a long strongly policy-oriented discussion of both public and private monetary institutions including the Reserve Bank, the commercial banks, the co-operative banks, and the money market. There is also a brief discussion of the desirability of India's continued membership of the Sterling Area.

- CHAMBERLIN, E. H. *The Economic Analysis of Labor Union Power*. (American Enterprise Association, Washington, D.C., 1958.) Pp. 48. \$1.00.

This essay stresses the growth of monopoly power of trade unions in the United States. Some implications of this growth for economic welfare and received economic analysis are discussed. The conventional theory of collective bargaining is deemed "antiquated and wholly misleading". An inversion of the traditional analysis of the firm is suggested, with wages, not profits, as residuals to be determined.

- COCHRAN, W. G., and COX, GERTRUDE M. *Experimental Designs*. 2nd ed. (John Wiley & Sons, New York, 1957.) Pp. 611. \$10.25.

This is the second, fairly substantially revised, edition of an earlier text. The book describes in considerable detail how to carry out, and to analyse the results of, the wide range of experimental designs now available. Its use requires no special knowledge of mathematics. The work is a classic which would be on the bookshelves of almost all practising statisticians and could be recommended to anyone who is concerned with designing and analysing experiments.

* Acknowledgment of publications does not guarantee review.

CROWTHER, SIR GEOFFREY. *Balances and Imbalances of Payments*. (Graduate School of Business Administration, Harvard University, 1957.) Pp. 70. \$2.00.

This little volume consists of lectures delivered at Harvard during 1957. Crowther presents an up-to-date version of his growth scheme whereby immature debtor-borrowers eventually become creditor-borrowers and argues that the Dollar Problem is likely to be permanent mainly because of inelastic demands for United States exports and imports.

DAVIES, R. W. *The Development of the Soviet Budgetary System*. (Cambridge University Press, 1958.) Pp. 373. 45/- stg.

DEANE, PHYLLIS (ed.). *Bibliography on Income and Wealth. Volume VI. 1953-54*. (Bowes & Bowes, London, 1958.) Pp. 139. 37/6 stg.

DENMAN, D. R. *Origins of Ownership. A brief history of land ownership and tenure in England from earliest times to the modern era*. (George Allen & Unwin, London, 1958.) Pp. 190. 22/6 stg.

This book is based on the works of A. Ballard, V. G. Childe, Sir John Clapham, E. A. Kosminsky, E. Lipson, Sir Frederic Maitland, Sir Frederick Pollock, M. Postan, F. Seebohm, Sir Frank Stenton, W. Stubbs, R. H. Tawney, Sir Paul Vinogradoff, and other prominent writers of English legal and economic history.

FOSSATI, ERALDO. *The Theory of General Static Equilibrium*. (Basil Blackwell, Oxford, 1958.) Pp. 247. 30/- stg.

This is a strictly theoretical exposition of the general equilibrium system. Not only content but also manner of presentation and concern with methodology are redolent of Pareto and Walras. Copious references to the various schools will be of value to students of the cross currents of economic thought.

FOUSEK, PETER G. *Foreign Central Banking: The Instruments of Monetary Policy*. (Federal Reserve Bank of New York, 1957.) Pp. 116. Available free for classrooms use and similar purposes.

A review of post-war trends in central banking techniques outside U.S.A. Degrees of recourse to the use of discount rates, open market operations, reserve requirements, liquidity ratios and direct and selective credit controls in the various countries are examined and a definite trend towards increasing reliance on more generalized and less direct quantitative credit controls is discerned. The final chapter surveys development patterns of short-term money markets.

GRONDONA, L. ST. CLARE. *Utilizing World Abundance*. (George Allen & Unwin, London, 1958.) Pp. 190. 21/- stg.

This book sets forth a comprehensive plan designed not so much to utilize world abundance as to regulate extreme fluctuations in international commodity prices. Essentially it envisages a vast British publicly-operated corporation empowered to buy under delimited conditions of over-supply and to re-sell when market prices rise above a nominated level. Provocative in its simplicity.

HAGUE, D. C. (ed.). *Stability and Progress in the World Economy*. (Macmillan, London, 1958.) Pp. 267. 25/- stg.

The five papers read (together with a summary of the subsequent discussion) at the first congress of the International Economic Association in Rome are printed in this volume. The topics treated were Stability and Progress: The Richer Countries' Problem (D. H. Robertson), The Poorer Countries' Problem (J. Viner); The Quest for Stability: The Real Factors (F. Perroux), The Monetary Factors (G. Haberler); International Stability and the National Economy (E. Lundberg).

INSTITUT FÜR WELTWIRTSCHAFT AN DER UNIVERSITÄT KIEL. *Gegenwartsprobleme der Agrarökonomie*. Festschrift für Fritz Baade. (Hoffman & Campe, Hamburg, Institut für Weltwirtschaft an der Universität Kiel, Kiel, 1958.) Pp. 482. DM 24.

This is an impressive collection of studies by friends of Fritz Baade, most of whom have been associated with him at the Kiel Institut für Weltwirtschaft. They are all concerned with the place of agriculture in contemporary and future economic development, and the emphasis is on empirically based studies of comparatively undeveloped regions. Essays by Max Biehl (Agrarian Revolution in China) and Otto Schiller (The Soviet Agrarian System—A Model for Development Regions?) are particularly interesting. More general studies of marketing

(Ursula Ewald) and land rent (Hans-Heinrich Herlemann) give further evidence of the vitality of this school of agricultural economics.

INTERNATIONAL JOURNAL OF AGRARIAN AFFAIRS. Vol. II, No. 4, January 1958. (Oxford University Press, London, 1958.) 9/6 Aust.

This issue is devoted to "Capital and Credit in Agriculture". F. H. Gruen of the N.S.W. Department of Agriculture writes about Australia. W. Germany is dealt with by G. Noell, Greece by C. Evelpidis, Italy by V. Ciarrocca and G. G. Dell'Angelo, Japan by T. Misawa and Y. Ito, Yugoslavia by V. Burzovski. A total of seven articles are compressed in 78 pages. The article of F. H. Gruen deals with capital formation, and this is also the main theme of the publication.

ISCHBOLDIN, BORIS. *Economic Synthesis*. (New Book Society of India, New Delhi, 1958.) Pp. 543. Rs. 30.

The author of this learned work describes it as "an attempt to rekindle the sort of analytical social economics which in recent years may seem to have lost some ground to the purely mathematical approach". It is a pity that the more original chapters—e.g. Ch. 19 on "Quasi Rent and Profit"—are not signposted more clearly.

JENNINGS, SIR IVOR. *Problems of the New Commonwealth*. (Duke University Press, Durham, North Carolina, Cambridge University Press, London, 1958.) Pp. 114. \$2.50.

JEWKES, J., SAWERS, D., and STILLERMAN, R. *The Sources of Invention*. (Macmillan, London, 1958.) Pp. 428. 51/6 Aust.

JONES, RICHARD. *An Essay on the Distribution of Wealth, and on the Sources of Taxation*. (Reprints of Economic Classics, Kelley and Millman, New York, 1956.) Pp. 329 + Appendix pp. 49. \$8.50.

Jones' *Essay* of 1831 is not, in the accepted sense of the term, an "economic classic", for there are probably not a great many economists who are familiar with it today. But it is a scarce book and its author has an important place in the history of economic thought. He was a distinguished forerunner of "the English historical school" of the later nineteenth century, and as such his work is well worthy of inclusion in this excellent series of reprints.

KINDLEBERGER, C. P. *Economic Development*. (Economic Handbook Series, McGraw-Hill, New York, 1958.) Pp. 325. 72/9 Aust.

This book is eclectic in approach combining various theories of the development process with a useful discussion of the policy problems involved in sustaining a development programme. The advantage of the book is that it blends the theoretical with the policy aspects during the course of discussion; the possibility of escape into remote abstraction is not likely. By maintaining the high standard of the Economic Handbook Series, the book recommends itself to those participating in courses on economic development.

MORSE, PHILIP M. *Queues, Inventories, and Maintenance*. Publications in Operations Research No. 1, Operations Research Society of America. (John Wiley & Sons, New York, 1958.) Pp. 202. \$6.50.

Professor Morse is a physicist who has specialized in operations research and is director of the Computations Centre at M.I.T. In this book he demonstrates a "fairly simple technique", based on systems of difference equations, for handling queuing problems. The problems (traffic jams, production bottlenecks, inventory control, etc.) are management problems. This method of handling them may be of value to some specialists in applied economics, and the manner in which it establishes the nature of the problems and possible solutions should interest economists generally.

MOSER, C. A. *Survey Methods in Social Investigation*. (William Heinemann, London, 1958.) Pp. 352. 35/- stg.

This book discusses the methodological problems of every stage of a large-scale social survey—from defining the population to be investigated through to the interpretation and presentation of the final results. Sampling procedures are described in non-technical language and illustrated with examples drawn from surveys conducted in Great Britain. The systematic treatment of response errors is a noteworthy feature. A useful bibliography of the literature on social survey methods is given at the end of the text.

NATIONAL BUREAU OF ECONOMIC RESEARCH. *The National Economic Accounts of the United States*. (National Bureau of Economic Research, New York, 1958.) Pp. 202. 65 cents.

NEVIN, E. *Text Book of Economic Analysis*. (Macmillan, London, 1958.) Pp. 422. 29/9 Aust.

This textbook covers in seven sections the field of economic theory at an elementary level. It was written mainly for students preparing for the English General Certificate of Education, but may be found useful as introductory reading for first year courses in Australian Universities; in particular the first four sections, concerned with price theory, would be helpful to students who find texts such as Stigler, and Stonier and Hague, too difficult at first reading.

PERLMAN, MARK. *Labor Union Theories in America. Background and Development*. (Row, Peterson and Company, New York, 1958.) Pp. 313. \$6.50.

The author distinguishes five basic theories of unionism, derived from these different approaches: the Christian Socialist and Roman Catholic, the Marxian Socialist, environmental psychology, neo-classical economics, and legal history. He outlines (1) the setting from which each theory developed, (2) the key ideas of each, (3) its relevance to modern conditions. An Appendix reviews four Congressional Investigations of trade unionism.

POUNDS, N. J. G., and PARKER, W. N. *Coal and Steel in Western Europe*. (Faber and Faber Ltd., London, 1957.) Pp. 381. 45/- stg.

The authors tacitly exclude Great Britain from Western Europe; conversely, they include Western Germany which throughout the period covered by this book was essentially Central European. Parts One and Two (by N.J.G.P.) cover the origins of the modern industry, technology of iron and steel, coal and coalfields in the eighteenth century, and transformation and growth in the nineteenth century in Belgium, France, Lorraine, Luxembourg and the Saar, and Germany. Part Three (by W.N.P.) discusses the growth and stabilization in the twentieth century. A useful record of facts.

ROBBINS, LIONEL. *Robert Torrens and the Evolution of Classical Economics*. (Macmillan, London, 1958.) Pp. 367. 56/6 Aust.

ROBERTSON, SIR DENNIS. *Lectures on Economic Principles. Volume II*. (Staples Press Ltd., London, 1958.) Pp. 162. 16/- stg.

SCHLOSS, H. H. *The Bank for International Settlements*. (North-Holland Publishing Co., Amsterdam, 1958.) Pp. 184. 15 guilders.

After a brief survey of international monetary co-operation before 1929, the events leading to the formation of the Bank for International Settlements and the structure and functions of the Bank are set out. A history of its operations from 1930 to 1957 is given, plus a brief evaluation suggesting that international agencies are incapable of solving any but minor problems unless more national authority is surrendered to them than is at present politically feasible.

SHACKLE, G. L. S. *Time in Economics*. (Professor De Vries Lecture, 1958.) (North-Holland Publishing Co., Amsterdam, 1958.) Pp. 111. 6.50 guilders.

Economic decisions are made by individuals in a "moment-in-time" on anticipations existing only in that moment. Only uncertainty between hypotheses balanced marginally in that moment makes decision meaningful; uncertainty statistics cannot resolve, since the instantaneous nature precludes frequency. "Man in his true humanity," concludes Shackle, "can neither predict nor be predicted."

SMITH, ADAM. *Lectures on Justice, Police, Revenue and Arms*. Edited by Edwin Cannan. (Reprints of Economic Classics, Kelley and Millman, New York, 1956.) Pp. 293. \$7.50.

Smith was in a state of philosophical transition when he delivered these lectures in 1763. If they were taken down surreptitiously behind a column in the classroom, in spite of the hazards (Smith hated note-takers) the student did a good job in reflecting the clearing mists of Smith's mind which finally lifted during the writing of *The Wealth of Nations*. Justice, Police, Revenue, Arms and The Law of Nations are the main subdivisions. Cannan supplies parallel text quotations from the grand opus for comparison. Books such as this are not classics (i.e. dead)—they are part of the essential reading of the properly equipped economist. Knowing the literature is the surest way of avoiding over-confidence and wasting time in the discovery and assessment of "new" ideas.

STARK, W. *The Sociology of Knowledge*. (Routledge and Kegan Paul, London, 1958.) Pp. 356. 36/- stg.

A survey of, and a contribution to, the theory of the interdependence of ideas and the social environment of their creators. The writer's aim is to establish a branch of knowledge, a "comprehensive science of man", or "meta-sociology", which asserts and examines the interrelations of all social phenomena.

STRAUSS, E. *Common Sense and the Common Market*. (George Allen & Unwin, London, 1958.) Pp. 168. 15/- stg.

In a serious attempt to evaluate the Rome Treaty and explain the political forces behind it, the author is critical of its bias in favour of big business and West Germany. He also criticises the British Free Trade Area proposal. Controversial, his bold discussion is stimulating except for a somewhat irrelevant history of customs union in Germany.

THOMAS, BRINLEY (ed.). *The Economics of International Migration*. (Macmillan, London, 1958.) Pp. 502. 64/9 Aust.

UNITED NATIONS. *Industrialization and Productivity. Bulletin No. 1*. (U.N. Department of Economics and Social Affairs, New York, 1958.) Pp. 77. 5/- stg.

This is the first issue of a new publication devoted to problems of industrialization in under-developed areas. It is designed to have a practical bias in that problems will be examined in the light of the concrete situations in which they arise. Three of the articles in this issue are on the question of optimum factor proportions or capital intensity in developing industrial production.

VINER, JACOB. *The Long View and the Short. Studies in Economic Theory and Policy*. (Free Press, Glencoe, Ill., 1958.) Pp. 462. \$7.50.

Professor Viner's friends adopted, as a sixty-fifth birthday *Festschrift*, a volume of his writings selected by them together with a bibliography of his work. Material primarily on international trade has been excluded, the items being classified as Economic Theory and Policy, History of Economic Thought, Scholarship and Graduate Training (one address) and Shorter Reviews. In time items range from 1921 to 1954; in scope from the famous Cost Curves article of 1931 to the review article on Keynes' *General Theory*. The emphasis is on reviews and review articles, and, in the same vein, critical commentaries on economic theory, more especially in application to public policy.

WADIA, P. A., and MERCHANT, K. T. *Our Economic Problem*. 5th ed. (Vora & Co. Publishers Private Ltd., Bombay, 1957.) Pp. 825. \$4.50.

WALKER, GILBERT. *Economic Planning by Programme and Control in Great Britain*. (William Heinemann, London and Melbourne, 1957.) Pp. 175. 29/9 Aust.

After discussion of the theoretical and statistical background, Professor Walker examines Britain's economic planning both during the war and in the post-war period up to 1951 under the Labour Governments. Although the nature of the fundamental problems and the relative effectiveness of economic planning by programme and control receive a fair measure of attention, the book is primarily descriptive rather than analytical in character.

WICKSELL, KNUT. *Selected Papers on Economic Theory*. (George Allen & Unwin, London, 1958.) Pp. 292. 30/- stg.

This collection of papers provides a valuable supplement to the author's major works. Apart from the publication of articles previously not available in English, the book includes an interesting introduction by Eric Lindahl on Wicksell's Life and Work. The articles, mostly from *Ekonomisk Tidskrift*, range over the theories of Money, Production and Distribution, Capital and Foreign Trade.

ZANIEWSKI, ROMUALD. *L'Origine du Proletariat Romain et Contemporain*. (Editions Nauwelaerts, Louvain, et Beatrice-Nauwelaerts, Paris, 1957.) Pp. 398. 350 Belgian francs.

Approximately a quarter of the book is devoted to the history of the proletariat of Rome and of the Middle Ages. The major part of the work starts with the "industrial revolution". On the whole, this part is a demographic and sociological discussion. The final part of the book deals with "controverses theoriques". The point of view taken by the author (who is a Doctor of Pedagogics and a Doctor of Political and Social Sciences) in this controversy is Roman Catholic.

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